

**AMERICAN SOCIETY OF ANIMAL SCIENCE  
OFFICERS 2000-2001**

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**ASAS  
MIDWESTERN SECTION  
BOARD OF DIRECTORS 2000-2001**

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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 19, 7:30 a.m. – 8:00 p.m.  
Tuesday, March 20, 7:00 a.m. – 4:00 p.m.  
Wednesday, March 21, 9:00 a.m. – 12:00 noon

<b>I</b>	<b>Before March 1</b>	<b>After March</b>
ADSA/ASAS Members	\$100	\$125
Undergraduate Students	\$10	\$10
Graduate Students	***\$20	\$20
Post Doctoral Fellow	\$20	\$20
ASAS Fellows	\$0	\$0
Nonmember	*\$210	\$235

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

**Cancellation Policy:** To be eligible for a 90% refund of meeting registration fees, requests must be received in writing before March 1, 2001. No refunds will be issued on ticketed events.

### BOARD OF DIRECTORS MEETING

Monday, March 19, 8:00 a.m. – 12:00 noon  
ASAS and ADSA, Savery Hotel, Room 210

## **A SPECIAL THANK YOU**

from the Midwestern Section of the  
American Society of Animal Science  
and  
the Midwest Branch of the  
American Dairy Science Association  
for support of the 2001 meetings  
to the following companies:

### **Outstanding Young Scientist Awards**

Extension – Land O’Lakes/Farmland Feed  
Research – Roche Vitamins Inc.,  
Animal Nutrition & Health  
Teaching – Moorman’s, Inc.

### **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

### **Agribusiness Award**

ADM, Animal Health and Nutrition

### **Student Competition Paper Awards**

Graduate M.S. – DeKalb Feeds, Inc.  
Graduate Ph.D. – Akey, Inc.  
Undergraduate – Land O’Lakes

### **Academic Quadrathlon**

APC Company, Inc.  
Intervet  
Iowa State University

### **Receptions**

Monday – Kemin Industries  
Tuesday – IMC

**Refreshment Breaks (Tuesday and Wednesday)**

DuPont Specialty Grains

**Lunch (Tuesday)**

Fort Dodge Animal Health

**Breakfast (Wednesday)**

Diamond V. Mills, Inc.  
Cargill Animal Nutrition Division,  
Vetlife, Milk Products, Inc.

**Cyber Cafe & Placement Center**

Cargill Animal Nutrition Division

**SYMPOSIA**

**Animal Behavior, Housing & Well-Being**

Purdue University Center for  
Food Animal Productivity and Well-Being  
USDA-ARS Livestock Behavior Research Unit

**Companion Animal**

DuCoa  
Hill's Pet Nutrition, Inc.  
Nestle (Friskies)  
The Iams Co.

**Extension**

APC Company, Inc.  
Land O'Lakes Animal Milk Products  
Milk Specialities

**Nonruminant Nutrition**

Danbred USA

# PAST RECIPIENTS OF AWARDS FOR YOUNG ANIMAL SCIENCE LEADERS

## OUTSTANDING EXTENSION SPECIALIST AWARD

1971	G. E. Ricketts, University of Illinois
1972	V. B. Mayrose, Purdue University
1974	M. R. Geasler, Iowa State University
1976	R. J. 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
1999	M. D. Tokach, Kansas State University
2000	J. F. Smith, Kansas State University

## OUTSTANDING RESEARCHER AWARD

1971	D. H. Baker, University of Illinois
1972	C. E. Allen, University of Minnesota
1974	F. N. Owens, University of Illinois
1976	W. G. Bergen, Michigan State University
1977	D. E. Bauman, University of Illinois
1978	G. L. Allec, 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. Koochmariaie, Roman L. Hruska, U.S. Meat Animal Research Center
1994	L. G. Sheffield, University of Wisconsin, Madison
1995	J. Odle, University of Illinois
1996	J. L. Nelssen, Kansas State University

1997 R. S. Prather, University of Missouri  
1998 D. Pomp, University of Nebraska  
1999 R. W. Johnson, University of Illinois  
2000 M. C. Lucy, University of Missouri

### **OUTSTANDING TEACHER AWARD**

1971 B. G. Harmon, University of Illinois  
1972 R. E. Hunsley, Purdue University  
1974 D. H. Gee, South Dakota State University  
1976 T. R. Cline, Purdue University  
1977 P. J. Cunningham, University of Nebraska  
1978 B. D. Moser, University of Nebraska  
1979 C. L. Hausler, Southern Illinois University  
1980 T. R. Carr, University of Illinois  
1981 M. E. Dikeman, Kansas State University  
1982 R. E. Morrow, University of Missouri  
1983 D. J. Kesler, University of Illinois  
1984 R. A. Easter, University of Illinois  
1985 D. F. Parrett, University of Illinois  
1986 J. G. Sebranek, Iowa State University  
1987 D. R. Brink, University of Nebraska  
1988 K. M. Irvin, The Ohio State University  
1989 R. P. Lemenager, Purdue University  
1990 B. R. Skaar, Iowa State University  
1991 D. A. Nichols, Kansas State University  
1992 M. A. Russell, Purdue University  
1993 D. K. Combs, University of Wisconsin, Madison  
1994 L. C. Martin, Kansas State University  
1995 M. E. Benson, Michigan State University  
1996 B. D. Banks, Michigan State University  
1997 H. D. Tyler, Iowa State University  
1998 C. R. Youngs, Iowa State University  
1999 J. N. Spain, University of Missouri  
2000 M. E. Doumit, Michigan State University

### **AGRIBUSINESS AWARD**

1995 P. L. Houghton, Heartland Cattle Co., McCook, Nebraska  
1996 J. A. Barmore, Vita Plus Corp., Madison, Wisconsin  
1997 D. E. Dill, Dairy Strategies, Mendota Heights, MN  
1998 C. M. Luhman, Land O'lakes Research Farm, Webster City, IA  
1999 Not Given  
2000 D. L. Hancock, Elanco Animal Health, Greenfield, IN

## **PAST WINNERS OF INVITATIONAL COMPETITIVE RESEARCH PAPER AWARDS**

### **UNDERGRADUATE STUDENTS**

1987 R. E. Raw, University of Missouri  
1988 J. A. Ragains, University of Missouri  
1989 G. L. Ambrose, South Dakota State University  
1990 C. N. Kemper, University of Missouri  
1991 T. R. Eberle, North Dakota State University  
1992 B. J. MacDonald, North Dakota State University  
1993 B. L. Dunn, Kansas State University  
1994 S. M. Nelson, University of Nebraska  
1995 L. J. Trinity, Iowa State University  
1996 M. E. Cunningham, Oklahoma State University  
1997 C. E. Sorenson, South Dakota State University  
1998 J. L. Strickland, University of Nebraska  
1999 B. A. DeMontigny, North Dakota State University  
2000 K. S. Freise, University of Illinois

## GRADUATE STUDENTS

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

## PAST WINNERS OF UNDERGRADUATE CONTEMPORARY ISSUES COMPETITION

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

## 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  
1999 S. P. Ford, Iowa State  
2000 J. R. Males, Oregon State

#### **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  
1999 R. D. Shaver, Wisconsin  
2000 R. J. Grant, Nebraska

#### **FUTURE MEETINGS**

2002 March 18–20  
2003 March 17–19

# SCIENTIFIC SESSIONS PROGRAM

## Special Livestock Symposium

### Contemporary Issues Facing US Livestock Industries

Chair: TBA

Monday, 9:00 a.m. - 12:15 p.m.

Room: 204AB

- 9:00 Livestock Commodity Updates Panel - NPPC, NCBA, NMPF
- 9:45 Question and Answer Session
- 10:00 Fate of DNA in the GI tract. Abigail Salyers, University of Illinois.
- 10:30 BREAK
- 10:45 Are DNA or proteins from feed detectable in livestock products? Kevin Glenn, Chair of DNA/Protein Detection in Animal Products Subcommittee of Agricultural Biotechnology Stewardship Technical Committee.
- 11:15 Reduced mycotoxin concentrations in Bt corn. Gary Munkvold, Iowa State University.
- 11:45 Preventing food allergy – The impact of biotechnology. Jim Astwood, Monsanto Company.
- 12:15 Lunch for attendees (advance registration is required)

## Nonruminant Nutrition I

### Sow Nutrition

Chair: Stewart Galloway, Consolidated Nutrition,  
Fort Wayne, IN

Monday, 1:00 p.m. - 2:45 p.m.

Room: 204FG

Time	Abstract Number	Paper
1:00	136	Effects of dietary lactation lysine level, lysine source, and dextrose on sow and litter performance. J.C. Peters* and D.C. Mahan, The Ohio State University, Columbus.
1:15	137	Effect of dietary lysine deficiency and valine excess on mammary protein metabolism in lactating sows. X. Guan <sup>1</sup> , B. J. Bequette <sup>2</sup> , P. K. Ku <sup>1</sup> , and N. L. Trottier* <sup>1</sup> , <sup>1</sup> Michigan State University, East Lansing, <sup>2</sup> Rowett Research Institute, Aberdeen, Scotland.
1:30	138	Plasma prolactin, glucose, and amino acid concentration response to dietary arginine supplementation in the lactating sow. J. Perez Laspiur* <sup>1</sup> , C. Farmer <sup>2</sup> , P. K. Ku <sup>1</sup> , and N. L. Trottier <sup>1</sup> , <sup>1</sup> Michigan State University, East Lansing, <sup>2</sup> Agriculture and Agri-Food Canada, Lennoxville, Quebec.
1:45	139	Evaluating nutrient dense and nutrient dense-low phytic acid corns with the addition of phytase for lactating sows. K. A. Bowers*, C. J. Kendall, and B. T. Richert, Purdue University, West Lafayette, IN.
2:00	140	Effect of reduced dietary Cu, Zn, Fe, and Mn on reproductive performance of sows. W.L. Flowers* <sup>1</sup> , J.W. Spears <sup>1</sup> , and G.M. Hill <sup>2</sup> , <sup>1</sup> North Carolina State University, Raleigh, <sup>2</sup> Michigan State University, East Lansing.

- 2:15 141 **NPPC Innovation Award – Applied Research** Effect of early-weaning (14 vs 19 d) on sow lactation performance during heat stress. I. Tissue loss, milk production, and subsequent reproduction. J. D. Spencer\*<sup>1</sup>, R. Cabrera<sup>2</sup>, R. Graves<sup>2</sup>, R.D. Boyd<sup>2</sup>, J. Vignes<sup>2</sup>, and G.L. Allee<sup>1</sup>, <sup>1</sup>University of Missouri-Columbia, <sup>2</sup>PIC USA.
- 2:30 142 Effect of early-weaning (14 vs. 19 d) on sow lactation performance during heat stress. II. Effect of milk replacer on piglet growth to weaning and 66d of age. J.D. Spencer\*<sup>1</sup>, R. Cabrera<sup>2</sup>, R. Graves<sup>2</sup>, R.D. Boyd<sup>2</sup>, J. Vignes<sup>2</sup>, and G.L. Allee<sup>1</sup>, <sup>1</sup>University of Missouri-Columbia, <sup>2</sup>PIC USA.

## **Nonruminant Nutrition II**

### **Amino Acid Nutrition**

Chair: John Less, ADM, Decatur, IL

Monday, 2:00 p.m. - 5:00 p.m.

Room: 204AB

Time	Abstract Number	Paper
2:00	143	True ileal digestibility of amino acids in sow's milk for 17-day-old pigs. I. Mavromichalis*, T.M. Parr, V.M. Gabert, and D.H. Baker, University of Illinois at Urbana-Champaign.
2:15	144	Relative bioefficacy of Biolys 60 compared to L-lysine-HCl in young pigs. M. R. Smiricky* <sup>1</sup> , I. Mavromichalis <sup>2</sup> , D. M. Albin <sup>1</sup> , J. E. Wubben <sup>1</sup> , M. Rademacher <sup>3</sup> , and V. M. Gabert <sup>1</sup> , <sup>1</sup> University of Illinois, Urbana, IL, <sup>2</sup> SCA Nutrition, Marion, IA, <sup>3</sup> Degussa-Huls AG, Hanau-Wolfgang, Germany.
2:30	145	The optimum isoleucine:lysine ratio to maximize growth performance of the early-weaned pig. B. W. James*, R. D. Goodband, M. D. Tokach, J. L. Nelssen, J. M. DeRouchey, and J. C. Woodworth, Kansas State University, Manhattan.
2:45	146	The tryptophan requirement of Phase I, II, and III pigs. A. C. Guzik* <sup>1</sup> , B. J. Kerr <sup>2</sup> , L. L. Southern <sup>1</sup> , and T. D. Bidner <sup>1</sup> , <sup>1</sup> LSU Agricultural Center, Baton Rouge, LA, <sup>2</sup> Nutri-Quest Inc., Chesterfield, MO.
3:00	147	Responses of young pigs to amino acids as influenced by environmental temperature. N. S. Ferguson*, University of Natal, South Africa.
3:15	148	Amino acid digestibility of reduced concentrations of intact dietary protein fed to growing pigs. E. R. Otto*, P. K. Ku, and N. L. Trottier, Michigan State University, East Lansing.
3:30	149	Amino acid fortified all-corn diets for late-finishing gilts. H. J. Liu, G. F. Yi*, J.D. Spencer, J.W. Frank, and G.L. Allee, University of Missouri-Columbia.
3:45	150	Estimation of the threonine to lysine ratio for growing and finishing gilts. J. W. Frank* <sup>1</sup> , D. C. Kendall <sup>1</sup> , A. M. Gaines <sup>1</sup> , J. L. Usry <sup>2</sup> , and G. L. Allee <sup>1</sup> , <sup>1</sup> University of Missouri-Columbia, <sup>2</sup> Heartland Lysine, Inc.
4:00	151	True digestible lysine requirements of PIC barrows over the finishing period. R. Wei* and D. R. Zimmerman, Iowa State University, Ames.
4:15	152	Isoleucine requirement of growing (25-40 kg) and finishing(90-105 kg) pigs. T.M. Parr* <sup>1</sup> , I. Mavromichalis <sup>1</sup> , B.J. Kerr <sup>2</sup> , and D.H. Baker <sup>1</sup> , <sup>1</sup> University of Illinois, Urbana, <sup>2</sup> Nutriquest, Inc., Chesterfield, MO.
4:30	153	The effect of fat level and source on apparent ileal amino acid digestibility and rate of passage in pigs. D. M. Albin*, M. R. Smiricky, J. E. Wubben, and V. M. Gabert, University of Illinois, Urbana.
4:45	154	Effect of dietary glutamine and asparagine on growth performance and nitrogen retention of broiler chicks fed low-CP diets. K. Bregendahl* and D.R. Zimmerman, Iowa State University, Ames.

# Nonruminant Nutrition III

## Posters

Monday, 1:00 p.m. - 4:00 p.m.  
Authors Present: 2:00 p.m. - 4:00 p.m.  
Room: Exhibit Hall, Room 206

Abstract Number	Paper
155	Dietary energy during prepubertal growth and reproductive development of gilts. J. Klindt*, J.T. Yen, and R.K. Christenson, USDA ARS U.S. Meat Animal Research Center, Clay Center, NE.
156	Fetal and maternal responses to ad libitum feed intake during early gestation. R.E. Musser*, D.L. Davis, R.D. Goodband, M.D. Tokach, and J.L. Nelssen, Kansas State University, Manhattan.
157	Determining the effect of increasing L-carnitine additions on sow performance and muscle fiber development of the offspring. R.E. Musser* <sup>1</sup> , R.D. Goodband <sup>1</sup> , K.Q. Owen <sup>2</sup> , D.L. Davis <sup>1</sup> , M.D. Tokach <sup>1</sup> , S.S. Dritz <sup>1</sup> , and J.L. Nelssen <sup>1</sup> , <sup>1</sup> Kansas State University, Manhattan, <sup>2</sup> Lonza, Inc.
158	Supplemental dietary phytase improves bioavailabilities of organic phosphorus and other nutrients in corn-soybean diets for sows. S.K. Baidoo* <sup>1</sup> , Q.M. Yang <sup>1</sup> , R.D. Walker <sup>1</sup> , and J.L. Boychuk <sup>2</sup> , <sup>1</sup> SROC, Univeristy of Minnesota, Waseca, <sup>2</sup> BASF (Canada).
159	Replacement value of field peas for soybean meal in sow lactation diets. D.G. Landblom* <sup>1</sup> , W.W. Poland <sup>1</sup> , R.L. Harrold <sup>2</sup> , and K. Miller <sup>2</sup> , <sup>1</sup> Dickinson Research Extension Center, <sup>2</sup> North Dakota State University, Fargo.
160	Variation in international soybean meal quality. C. M. Grieshop*, A. B. Batal, D. H. Baker, C. M. Parsons, and G. C. Fahey, Jr., University of Illinois, Urbana.
161	Use of dry extruded-expelled soybean meal for swine diets. M. J. Webster <sup>1</sup> , J. C. Woodworth* <sup>1</sup> , M. D. Tokach <sup>1</sup> , R. D. Goodband <sup>1</sup> , J. L. Nelssen <sup>1</sup> , S. S. Dritz <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.
162	Grower-finisher growth performance and carcass characteristics including attempts to detect transgenic plant DNA and protein in muscle from pigs fed genetically modified "Bt" corn. T. E. Weber* and B. T. Richert, Purdue University, West Lafayette, IN.
163	Comparison of two methods to determine DE content of barley for grower pigs. M.N. Casano* <sup>1,2</sup> and R.T. Zijlstra <sup>1</sup> , <sup>1</sup> Prairie Swine Centre Inc., <sup>2</sup> University of Saskatchewan, Saskatoon, Canada.
164	A comparison between feeding plasma and peptide proteins on nursery pig growth performance and intestinal health. C. A. Boren* <sup>1</sup> , M. S. Carlson <sup>1</sup> , T. L. Veum <sup>1</sup> , J. R. Turk <sup>1</sup> , and G. W. Tibbetts <sup>2</sup> , <sup>1</sup> University of Missouri-Columbia, <sup>2</sup> Alltech Biotechnology, Inc., Nicholasville, KY.
165	Effects of gamma ray and electron beam irradiation levels in spray-dried blood meal on nursery pig performance. J.M. DeRouche* <sup>1</sup> , J.L. Nelssen, M.D. Tokach, R.D. Goodband, S.S. Dritz, J.C. Woodworth, M.J. Webster, B.J. James, and D.E. Real, Kansas State University, Manhattan.
166	Effects of irradiation processing of specialty protein products on nursery pig performance. J.M. DeRouche* <sup>1</sup> , M.D. Tokach, J.L. Nelssen, R.D. Goodband, S.S. Dritz, J.C. Woodworth, M.J. Webster, B.W. James, and D.E. Real, Kansas State University, Manhattan.
167	Ileal mucin output in growing pigs fed semipurified diets with different protein sources. D. M. Albin*, M. R. Smiricky, J. E. Wubben, and V. M. Gabert, University of Illinois, Urbana.
168	True digestible lysine requirements of PIC barrows over the growing-finishing period. R. Wei* and D.R. Zimmerman, Iowa State University, Ames.
169	Optimum threonine:lysine ratio for pigs in the 90 to 120 kg phase. M.E. Johnston* <sup>1</sup> , R.D. Boyd <sup>1</sup> , C.E. Fralick <sup>2</sup> , and J.L. Usry <sup>3</sup> , <sup>1</sup> PIC USA Inc., Franklin, KY, <sup>2</sup> Swine-Tek Research and Consulting, Van Wert, OH, <sup>3</sup> Heartland Lysine Inc., Chicago, IL.
170	Plasma urea concentrations of pigs on commercial operations. R. L. Fischer*, P. S. Miller, and A. J. Lewis, University of Nebraska, Lincoln.
171	The molecular form of dietary protein influences growth performance of broiler chicks. K. Bregendahl* and D.R. Zimmerman, Iowa State University, Ames.

- 172 Relative potential for lysine oxidation in tissues of neonatal pigs. N. J. Benevenga\*, L. G. Haas, and T. D. Crenshaw, University of Wisconsin-Madison.
- 173 Plasma iron, latent and total iron binding capacity and percent saturation of newborn and seven day old pigs. N. J. Benevenga\*, L. L. Pope, and T. D. Crenshaw, University of Wisconsin-Madison.
- 174 Pepsin concentration and ambient pH but not the presence of meat and bone meal impacts the half-life of pepsin *in vitro*. Y.R. Qiao\* and T.A. van Kempen, North Carolina State University, Raleigh.
- 175 Effects of phytase on growth performance and bioavailabilities of organic phosphorus and other nutrients in corn-soybean meal diets for young pigs. Q.M. Yang\*<sup>1</sup>, S.K. Baidoo<sup>1</sup>, J.L.L. Boychuck<sup>2</sup>, and R.D. Walker<sup>1</sup>, <sup>1</sup>SROC, University of Minnesota, Waseca, <sup>2</sup>BASF (Canada), George Town.
- 176 Efficacy of least-cost matrix values for Natuphos phytase additions to swine diets. T.D. Crenshaw, J.A. Kane, M.R. Glenn, and D.K. Schneider, University of Wisconsin, Madison.
- 177 A simple *in vitro* procedure for predicting available phosphorus in feed ingredients for swine. A. Tsunoda\*, D. W. Bollinger, D. R. Ledoux, and T. L. Veum, University of Missouri, Columbia.
- 178 Effects of lowering dietary trace mineral (Fe, Zn, and Cu) concentrations on performance and bone characteristics of young pigs fed diets containing low phytic acid barley. T. L. Veum\*<sup>1</sup>, D. W. Bollinger<sup>1</sup>, D. R. Ledoux<sup>1</sup>, M. S. Carlson<sup>1</sup>, and V. Raboy<sup>2</sup>, <sup>1</sup>University of Missouri, Columbia, <sup>2</sup>USDA-ARS National Small Grain Germplasm Research Facility, Aberdeen, ID.
- 179 Effect of lower concentrations of copper proteinate compared to copper sulfate on mineral excretion of nursery pigs. C. Wu<sup>1</sup>, A. Tsunoda<sup>1</sup>, D. W. Bollinger<sup>1</sup>, M. S. Carlson<sup>1</sup>, T. L. Veum\*<sup>1</sup>, and G. W. Tibbetts<sup>2</sup>, <sup>1</sup>University of Missouri, Columbia, <sup>2</sup>Alltech, Inc., Nicholasville, KY.
- 180 Effect of lower concentrations of zinc proteinate compared to zinc oxide on mineral utilization by nursery pigs. C. Wu<sup>1</sup>, A. Tsunoda<sup>1</sup>, D. W. Bollinger<sup>1</sup>, M. S. Carlson\*<sup>1</sup>, T. L. Veum<sup>1</sup>, and G. W. Tibbetts<sup>2</sup>, <sup>1</sup>University of Missouri, Columbia, <sup>2</sup>Alltech, Inc. Nicholasville, Kentucky, USA.
- 181 Effects of yeast supplementation to diets with or without growth promoting levels of copper, zinc and antibiotics on growth performance of weanling pigs. E. van Heugten\* and K. L. Dorton, North Carolina State University, Raleigh.
- 182 Effects of dietary zinc and endotoxin challenge on the acute phase response in weanling pigs. S.L. Mandali\*, S.D. Carter, A.B. Arquitt, E.A. Droke, B.J. Stoecker, L.J. Spicer, and M.J. Rincker, Oklahoma State University, Stillwater.
- 183 Effect of a mannan oligosaccharide on growth of nursery pigs. F. M. LeMieux\*, L. L. Southern, and T. D. Bidner, LSU Agricultural Center, Baton Rouge, LA.
- 184 Evaluation of differences in mean body surface temperature and radiant heat loss in growing pigs with infrared thermography. J. A. Loughmiller\*, M. F. Spire, M. D. Tokach, S. S. Dritz, J. L. Nelssen, R. D. Goodband, and S. B. Hogge, Kansas State University, Manhattan.
- 185 Sorting growing-finishing pigs by weight fails to improve growth performance or reduce variation. P. R. O'Quinn\*, S. S. Dritz, R. D. Goodband, M. D. Tokach, J. C. Swanson, J. L. Nelssen, and R. E. Musser, Kansas State University, Manhattan.

## Teaching

### Swine Management/Production Instructors Discussion Group

Chair: Duane Reese, University of Nebraska

Monday, 1:00 p.m. – 4:00 p.m.

Room: 205J

Time	Paper
1:00	Opening comments and introductions- Duane Reese, University of Nebraska

- 1:05 Career opportunities for undergraduates in the pork industry and preparation expected for those careers - Joe McNertney, Iowa Select Farms, Iowa Falls, IA and Brian Knudson, Cargill, Minneapolis, MN.
- 2:00 Discussion and summary - Tim Safranski, University of Missouri
- 2:25 My most valuable teaching method, class exercise, or educational philosophy. Attending instructors
- 3:50 Organization and objectives for 2002 meeting - Jerry Shurson, University of Minnesota

## **Undergraduate Student Competitive Research Papers**

Chair: Jess L. Miner, University of Nebraska, Lincoln

Monday, 3:30 p.m. - 6:00 p.m.

Room: 204C

Time	Abstract Number	Paper
3:30	348	Effects of added phytase in swine diets on performance, body composition, and longissimus dorsi quality traits. R. M. Rienstra* <sup>1</sup> , T. E. Socha <sup>1</sup> , J. E. Tilton <sup>1</sup> , and R. Fisher <sup>2</sup> , <sup>1</sup> North Dakota State University, Fargo, <sup>2</sup> Vigortone Ag Products, Cedar Rapids, IA.
3:45	349	Comparative feeding value of commercially prepared market lamb feeds. R.S. Reid* <sup>1</sup> , G.A. Younglove <sup>1</sup> , D.A. Sanchez <sup>2</sup> , S. Nash <sup>3</sup> , and S. Harrison <sup>4</sup> , <sup>1</sup> Chadron State College, <sup>2</sup> University of Wyoming Uinta County Extension, <sup>3</sup> University of Idaho Bingham County Extension, <sup>4</sup> University of Idaho Caribou County Extension.
4:00	350	Identification and mapping of pig sequence tagged-sites. C. P. Wilkinson*, P. J. Venta, N. E. Raney, C. R. Farber, C. W. Ernst, and C. W. Ernst, Michigan State University, East Lansing.
4:15	351	Effects of a moisture control system on energy and nitrogen digestibility of pelleted feeds for growing pigs. J. A. Wilson* <sup>1</sup> , L. J. Johnston <sup>1</sup> , and D. G. Greer <sup>2</sup> , <sup>1</sup> University of Minnesota, Morris, <sup>2</sup> AgriChem, Inc., Ham Lake, MN.
4:30	352	Energy supplementation of nursing beef calves on native range in southeastern North Dakota. T. D. Klein*, A. M. Encinias, H. B. Encinias, M. L. Bauer, J. S. Caton, and G. P. Lardy, North Dakota State University, Fargo.
4:45		BREAK
5:00	353	Conjugated linoleic acid and body fat reduction in mice. K.R. Nollette* <sup>1</sup> and J.L. Miner <sup>1</sup> , <sup>1</sup> University of Nebraska.
5:15	354	Foal Vocalizations and and Stress During Weaning. S. Turcott*, C. Moons, and A. Zanella, Michigan State University.
5:30	355	Relationships of ham and loin pork quality measurements. D. M. Price* <sup>1</sup> , K. W. McMillin <sup>1</sup> , M. A. Persica <sup>1</sup> , R. L. Payne <sup>1</sup> , J. L. Shelton <sup>1</sup> , and J. O. Matthews <sup>1</sup> , <sup>1</sup> LSU Agricultural Center.
5:45	356	Influence of diet type and mixed microbial extract (MME) treatment on intake, digestion, and nitrogen retention in growing ram lambs. T. L. Lawler*, M. L. Bauer, V. I. Burke, T. C. Gilbery, G. P. Lardy, and J. S. Caton, North Dakota State University, Fargo.

## **Animal Behavior and Well-Being I**

### **Symposium: Livestock Cognition: Implications on Production and Well-Being**

Sponsored by: USDA-ARS Livestock Behavior Research Unit and Purdue University Center for Animal Productivity and Well Being, West Lafayette, IN.

Chair: Donald C. Lay Jr., USDA-ARS-LBRU, West Lafayette, IN

Tuesday, 8:00 a.m. -10:00 a.m.  
Room: 205D

Time	Abstract Number	Paper
8:00	1	INVITED Can we understand farm animal welfare without taking into account the issues of emotion and cognition? R. Dantzer*, INRA-INSERM.
8:30	2	INVITED Methods of assessing cognitive abilities of farm animals. C. Croney*, University of Maryland.
9:00	3	INVITED Cognition Studies With Pigs: Livestock Cognition and Its Implication for Production. S. Held*, M. Mendl, K. Laughlin, and O. Burman, University of Bristol.
9:30		Panel for Questions

## **Animal Behavior and Well-Being II**

### **Management to Maximize Well-Being**

Chair: Jeff Carroll, USDA-ARS, Columbia, MO

Tuesday, 10:15 a.m. - 11:15 a.m.  
Room: 205D

Time	Abstract Number	Paper
10:15	4	Heat stress mortality in Midwest feedlots. T.L. Mader* <sup>1</sup> , L.L. Hungerford <sup>2</sup> , J.A. Nienaber <sup>2</sup> , M.J. Buhman <sup>2</sup> , M.S. Davis <sup>1</sup> , G.L. Hahn <sup>2</sup> , W.M. Cerkoney <sup>1</sup> , and S.M. Holt <sup>3</sup> , <sup>1</sup> University of Nebraska, Northeast Research & Extension Center, Concord, NE, <sup>2</sup> Great Plains Veterinary Education Center or U.S. Meat Animal Research Center, Clay Center, NE, <sup>3</sup> Animal Production Dept., University of Queensland, Gatton College, Queensland, Australia.
10:30	5	Effect of hut design on farrowing and lactation performance of pigs housed in a hoop structure. A. V. Frampton* <sup>1</sup> , M. Ellis <sup>1</sup> , and S. E. Curtis <sup>1</sup> , <sup>1</sup> University of Illinois, Urbana.
10:45	6	Effect of genetic selection for loin-eye area on behavior and whole blood serotonin levels in Landrace pigs. S. Torrey* <sup>1</sup> , S. Weaver <sup>2</sup> , E. Pajor <sup>1</sup> , D. Kuhlers <sup>3</sup> , and T. Stewart <sup>1</sup> , <sup>1</sup> Purdue University, West Lafayette IN, <sup>2</sup> USDA-ARS, Livestock Behavior Research Unit, West Lafayette IN, <sup>3</sup> Auburn University, Auburn AL.
11:00	7	Effect of sorting, removal and remixing on finishing pig performance. M.C. Brumm* <sup>1</sup> , M. Ellis <sup>2</sup> , L. J. Johnston <sup>3</sup> , D. W. Rozeboom <sup>4</sup> , and D. R. Zimmerman <sup>5</sup> , <sup>1</sup> University of Nebraska, Concord, <sup>2</sup> University of Illinois, Urbana, <sup>3</sup> University of Minnesota, Morris, <sup>4</sup> Michigan State University, East Lansing, <sup>5</sup> Iowa State University, Ames.

# Breeding and Genetics I

## Dairy Cattle Breeding and QTL Theory

Chair: William Herring, University of Missouri, Columbia

Tuesday, 8:30 a.m. - 11:30 a.m.

Room: 205E

Time	Abstract Number	Paper
8:30	13	Reproductive performance of Ohio dairy herds in the 1990's: Preliminary, descriptive results. P.J. Rajala-Schultz* <sup>1</sup> and G.S. Frazer <sup>1</sup> , <sup>1</sup> The Ohio State University, Columbus.
8:45	14	Genetic evaluation of fertility in US Holstein cattle. K. A. Weigel* <sup>1</sup> , <sup>1</sup> University of Wisconsin, Madison.
9:00	15	INVITED Genetic evaluation of dairy cattle using test-day models. J. Jensen*, Danish Institute of Agricultural Sciences.
10:00		BREAK
10:15	16	Methods to categorize patterns of elevated test day somatic cell score. X. Li, M. M. Schutz*, and A. P. Schinckel, Purdue University, West Lafayette, IN.
10:30	17	Identification of genetic markers associated with production and health traits in Holstein cattle using single and multiple trait analyses. A. B. Kurtz*, S. L. Rodriguez-Zas, D. W. Heyen, and H. A. Lewin, University of Illinois at Urbana-Champaign.
10:45	18	Genetic evaluation using finite locus models. L.R. Totir* <sup>1</sup> , R.L. Fernando <sup>1</sup> , S.A. Fernandez <sup>1</sup> , and B.R. Southey <sup>2</sup> , <sup>1</sup> Iowa State University, Ames; <sup>2</sup> University of Illinois, Urbana.
11:00	19	Statistical models and tests for detecting imprinted genes in QTL scans. H.K. Lee <sup>1</sup> , J.C.M. Dekkers* <sup>2</sup> , R.L. Fernando <sup>2</sup> , and M.F. Rothschild <sup>2</sup> , <sup>1</sup> National Livestock Research Institute, South Korea, <sup>2</sup> Iowa State University, Ames.
11:15	20	Computer simulation comparison of Least Squares Lehmann-Scheffé and REML estimation of variance components. W.D. Slinger* <sup>1</sup> and J.W. Carlson <sup>1</sup> , North Dakota State University.

## Midwest ADSA/ASAS Extension Breakfast

### A Discussion of Booms and Busts in Extension Programs

Moderators:

John Smith, Kansas State University  
Dan Faulkner, University of Illinois

Tuesday, 6:45 a.m.  
Savery Hotel, Grand A

Each year, Extension Specialists from around the Midwest Section gather for the Extension Breakfast at this meeting. These specialists possess years of experience designing and delivering Extension programs. We will have an informal discussion of Extension programming ideas that worked very well and those that did not reach expectations. Come prepared to listen and share your experience if you wish. This is a great opportunity to learn from the experiences of others!

## **Extension I**

### **Feeding Management of Young Calves**

Chair: John Smith, Kansas State University, Manhattan

Tuesday, 8:00 a.m. - 9:30 a.m.

Room: 138

<b>Time</b>	<b>Abstract Number</b>	<b>Paper</b>
8:00	50	Effects of feeding rate and protein concentration in milk replacers on growth and body composition of Holstein calves. K.S. Bartlett*, J.K. Drackley, and F.K. McKeith, University of Illinois, Urbana.
8:15	51	Effects of energy sources in milk replacers on growth and body composition of Holstein calves. K. S. Bartlett*, F. K. McKeith, and J. K. Drackley, University of Illinois, Urbana.
8:30	52	Evaluation of an oral immunoglobulin supplement for milk fed dairy calves. J. D. Quigley, C. A. Jaynes-Kost, and T. M. Anspach, APC Company, Inc., Ames, IA.
8:45	53	Effects of spray-dried whole egg in calf milk replacers on intake, growth and health of dairy calves. J. D. Quigley*, C. A. Jaynes-Kost, and M. L. Miller, APC Company, Inc., Ames, IA.
9:00	54	Supplemental glutamine does not overcome the growth depression caused by soy protein concentrate in calf milk replacer. J. K. Drackley*, K. L. Bailey, K. S. Bartlett, and R. M. Blome, University of Illinois, Urbana.
9:15	55	Prediction of water intake in young dairy calves. J. D. Quigley, C. A. Jaynes-Kost, M. L. Miller, and T. M. Anspach, APC Company, Inc., Ames, IA.

## **Extension II**

### **Producer and Youth Education**

Chair: Cliff Lamb, University of Minnesota, Grand Rapids

Tuesday, 10:00 a.m. - 11:00 a.m.

Room: 138

<b>Time</b>	<b>Abstract Number</b>	<b>Paper</b>
10:00	56	The Missouri Show-Me-Select Replacement Heifer Program. R. F. Randle*, W. O. Herring, M. S. Kerley, R. L. Larson, K. C. Olson, V. L. Pierce, and D. J. Patterson, University of Missouri, Columbia.
10:15	57	Online extension education integrated with on-campus instruction: an advanced reproductive management course at the University of Illinois. D. J. Kesler*, D. J. Miller, R. L. Wallace, M. F. Hutjens, J. H. Baltz, and T. L. Steckler, University of Illinois, Urbana.
10:30	58	Development of a web-based scheduling program for synchronization of estrus in cattle. M.A. Dikeman*, D.R. Strohbehn, and C.R. Youngs, Iowa State University, Ames.
10:45	59	Illinois 4-H/FFA Quality Assurance and Ethics Clinic. D.W. Seibert*, E.N. Ballard, J.H. Baltz, D.B. Fischer, D.J. Jennings, K.H. Kline, R.K. Knipe, D.R. Oswald, and T.D. Saxe, University of Illinois, Urbana.

# Graduate Student Competitive Research Papers

## M.S. Division

Chair: Daniel Buskirk, Michigan State University, East Lansing

Tuesday, 8:00 a.m. – 11:30 a.m.

Room: 140

Time	Abstract Number	Paper
8:00	80	Effect of level and source of nitrogen and minerals on water utilisation patterns in growing pigs. M.I. Shaw <sup>*1,2</sup> and J.F. Patience <sup>1</sup> , <sup>1</sup> Prairie Swine Centre, Inc., Saskatoon, Canada, <sup>2</sup> University of Saskatchewan, Saskatoon, Canada.
8:15	81	Dexamethasone treatment and increased growth in neonatal piglets. J.S. Seaman <sup>*1</sup> , T.J. Safranski <sup>1</sup> , R.L. Matteri <sup>2</sup> , and J.A. Carroll <sup>2</sup> , <sup>1</sup> University of Missouri, <sup>2</sup> Animal Physiology Research Unit, Agricultural Research Service, USDA, Columbia, MO.
8:30	82	Effect of dietary Bacillus subtilus Ferm (BP-3418) on odor and nutrient excretion in pigs. J. S. Knott <sup>*</sup> , G. C. Shurson, and M. H. Whitney, University of Minnesota, St. Paul.
8:45	83	Feeding degermed, dehulled corn to reduce nutrient excretion and improve performance in pigs. A.J. Moeser <sup>*</sup> , I.B. Kim, E. van Heugten, and T. van Kempen, North Carolina State University, Raleigh.
9:00	84	Effect of uncoupling protein 1 knockout in mice divergently selected for heat loss. T.G. McDanel <sup>d*1</sup> , M.K. Nielsen <sup>1</sup> , and J.L. Miner, <sup>1</sup> University of Nebraska.
9:15	85	Effects of high linoleic safflower seed supplementation for gestating ewes on fat deposition in lambs. H. B. Encinias <sup>*</sup> , A. M. Encinias, M. L. Bauer, and G. P. Lardy, North Dakota State University, Fargo.
9:30	86	Outcomes assessment for introduction to animal science - subjective and objective measures and the effects of student demographics. M. A. Deppe <sup>*1</sup> , G. F. Jones <sup>1</sup> , K. J. Stalder <sup>2</sup> , and A. E. Ramer <sup>1</sup> , <sup>1</sup> Western Kentucky University, Bowling Green, <sup>2</sup> University of Tennessee, Knoxville.
9:45		BREAK
10:00	87	Characterization of the porcine interferon regulatory factor 6 (IRF6) gene: cDNA cloning, expression analysis and chromosomal localization. C. R. Farber <sup>*</sup> , N. E. Raney, and C. W. Ernst, Michigan State University, East Lansing.
10:15	88	Ranch of origin management factors affecting the occurrence of respiratory tract lesions in feedlot steers at harvest. N. K. Grathwohl <sup>*</sup> , W. B. Epperson, B. J. Johnson, and S. W. Fausti, South Dakota State University.
10:30	89	Supply of essential amino acids to the small intestine in cattle consuming restricted amounts of forage plus supplementary undegradable intake protein. E. J. Scholljegerdes <sup>*</sup> , J. Gould, B. W. Hess, and P. A. Ludden, University of Wyoming, Laramie.
10:45	90	The optimum valine:lysine ratio in nursery diets to maximize growth performance in weanling pigs. B. W. James <sup>*</sup> , R. D. Goodband, M. D. Tokach, J. L. Nelssen, J. M. DeRouchey, and J. C. Woodworth, Kansas State University, Manhattan.
11:00	91	Effect of phytase on plasma metabolites in pigs after a meal. S. B. Williams <sup>*</sup> , J. O. Matthews, T. D. Bidner, and L. L. Southern, LSU Agricultural Center, Baton Rouge.
11:15	92	Effect of a step-up or step-down ractopamine sequence for late-finishing pigs. C.T. Herr <sup>*</sup> , D.C. Kendall, K.A. Bowers, S.L. Hankins, T.E. Weber, A.P. Schinckel, and B.T. Richert, Purdue University, West Lafayette, IN.

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

## Muscle Biology and Growth

Chair: Steve Jones, University of Nebraska, Lincoln

Tuesday 9:30 a.m. - 11:15 a.m.

Room: 204C

Time	Abstract Number	Paper
9:30	100	Identification of genes downstream of myostatin in the developing bovine embryo. J.K. Potts* <sup>1</sup> , T.P.L. Smith <sup>2</sup> , and J.M. Reecy <sup>1</sup> , <sup>1</sup> Iowa State University, Ames, <sup>2</sup> USDA MARC, Clay Center, NE.
9:45	101	Altered myosin heavy chain isoform transitions in satellite cells and pectoralis major muscle from LSN chickens. A. Yilmaz*, M. Wick, and S.G. Velleman, The Ohio State University, Columbus.
10:00	102	Changes in muscle ultrastructure and temporal expression of myosin heavy chain isoforms in selenium deficient chickens. A. Yilmaz*, M. Wick, and J.D. Latshaw, The Ohio State University, Columbus.
10:15	103	<b>NPPC Innovation Award – Basic Research</b> Protein accretion in pigs infected with <i>mycoplasma hyopneumoniae</i> . J. Escobar* <sup>1</sup> , W.G. Van Alstine <sup>2</sup> , D.H. Baker <sup>1</sup> , and R.W. Johnson <sup>1</sup> , <sup>1</sup> University of Illinois, Urbana, <sup>2</sup> Purdue University, W. Lafayette, IN.
10:30	104	Effects of summer heat on growth, carcass composition, and quality grades in feedlot steers. M.J. Leonard*, E.P. Berg, D.E. Spiers, and L.E. McVicker, University of Missouri, Columbia.
10:45	105	Appetite-regulating gene expression is altered by weaning in 2-wk-old pigs. R.L. Matteri* <sup>1</sup> , A. Woldeghebriel <sup>2</sup> , C.J. Dyer <sup>3</sup> , D.H. Keisler <sup>4</sup> , D.L. Grohs <sup>3</sup> , and F.C. Buonomo <sup>3</sup> , <sup>1</sup> Animal Physiology Research Unit, USDA-ARS, Columbia, MO, <sup>2</sup> Lincoln University, Jefferson City, MO, <sup>3</sup> Monsanto Co., Chesterfield, MO, <sup>4</sup> University of Missouri, Columbia.
11:00	106	Growth and body composition in growing-finishing pigs fed a liquid milk replacer diet throughout the nursery phase. M. E. Spurlock* <sup>1</sup> , J. L. Kuske <sup>1</sup> , C. Camacho-Rea <sup>1</sup> , G. R. Frank <sup>2</sup> , G. M. Willis <sup>2</sup> , and K. L. Houseknecht <sup>3</sup> , <sup>1</sup> Purdue University, West Lafayette, IN, <sup>2</sup> Purina Mills, Inc., St. Louis, MO, <sup>3</sup> Pfizer, Inc., Groton, CT.

## Nonruminant Nutrition IV

### Grow-Finish Nutrition

Chair: Merlin Lindemann, University of Kentucky, Lexington

Mark Bertram, Pork Technologies,

L. C., Ames, IA

Tuesday, 8:00 a.m. - Noon

Room: 204FG

Time	Abstract Number	Paper
8:00	186	The effects of graded levels of chromium propionate on growth, carcass traits, pork quality, and plasma NEFA concentrations of growing-finishing pigs. R. L. Payne*, S. L. Johnston, J. L. Shelton, J. O. Matthews, J. E. Pontif, T. D. Bidner, and L. L. Southern, LSU Agricultural Center, Baton Rouge.
8:15	187	Effect of chromium propionate in low energy diets on growth, carcass traits, pork quality, and plasma NEFA concentrations in growing-finishing gilts. J. L. Shelton*, R. L. Payne, L. L. Southern, and T. D. Bidner, LSU Agricultural Center, Baton Rouge.
8:30	188	Effect of chromium propionate on growth, carcass traits, and pork quality of finishing gilts. J. O. Matthews*, F. M. LeMieux, A. C. Guzik, L. L. Southern, T. D. Bidner, and M. A. Persica, Louisiana State University Agricultural Center, Baton Rouge.

- 8:45 189 Effect of nutritional level while feeding ractopamine to late-finishing pigs. C.T. Herr\*, D.C. Kendall, A.P. Schinckel, and B.T. Richert, Purdue University, West Lafayette, IN.
- 9:00 190 Evaluation of three genetic populations of pigs for response to increasing levels of ractopamine. C.T. Herr\*, S.L. Hankins, A.P. Schinckel, and B.T. Richert, Purdue University, West Lafayette, IN.
- 9:15 191 Effect of ractopamine and lysine levels on growth and carcass responses in finishing gilts. D.R. Cook\*, E.A. Newton, W.H. Turlington, K.R. Cera, and K.L. Adams, Akey, Inc., Lewisburg, OH.
- 9:30 192 Effects of feeding graded levels of ractopamine on pig performance in a commercial finishing facility. R. G. Main\*, S. S. Dritz, M. D. Tokach, R. D. Goodband, and J.L. Nelssen, Kansas State University, Manhattan.
- 9:45 BREAK
- 10:00 193 Response of barrows to phytase in lysine deficient diets. M.C. Brumm\*, University of Nebraska, Northeast Research & Extension Center, Concord.
- 10:15 194 Effects of a 28-day pre-slaughter withdrawal of supplemental dietary vitamins and minerals on vitamin content of pork, bone quality, and carcass bone fractures. D. T. Shaw\*, D. W. Rozeboom, G. M. Hill, A. M. Booren, M. W. Orth, D. S. Rosenstein, and J. E. Link, Michigan State University, East Lansing.
- 10:30 195 Conjugated linoleic acid supplementation increases belly weight in lean-genotype gilts. L. A. Averette\*, M. T. See, and J. Odle, North Carolina State University, Raleigh.
- 10:45 196 Influence of the level of inclusion of soybean meal and peanut meal in the diet on pork quality. Y. Hyun\*, M. Ellis, and F. McKeith, University of Illinois at Urbana-Champaign.
- 11:00 197 Evaluation of a rendered poultry (Broiler) mortality product as a supplemental protein source for growing-finishing pig diets. R. O. Myer\* and J. H. Brendemuhl, University of Florida, Gainesville.
- 11:15 198 Effect of feeding *Bacillus* cultures on performance of growing-finishing swine and on pen cleaning characteristics. M. E. Davis\*, D. C. Brown, D. L. Kirkpatrick, and C. V. Maxwell, University of Arkansas, Fayetteville.
- 11:30 199 The effect of stress on the nutrient requirements of growing pigs. N.S. Ferguson\*, University of Natal, Scottsville, South Africa.
- 11:45 200 Effects of a pellet binder on pellet quality and growth performance of finishing pigs. C. W. Starkey\*<sup>1</sup>, J. D. Hancock<sup>1</sup>, C. A. Maloney<sup>1</sup>, D. J. Lee<sup>1</sup>, L. J. McKinney<sup>1</sup>, and K. C. Behnke<sup>1</sup>, <sup>1</sup>Kansas State University.

## Nonruminant Nutrition V

### Trace Minerals, MOS, and Immune Modulators

Chair: Gretchen Hill, Michigan State University,  
East Lansing  
Terry Ward, Zinpro Corp., Eden Prairie, MN

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

	Abstract	
Time	Number	Paper
8:00	201	Effect of Availa®Cu level on rate and efficiency of body weight gain in nursery pigs. D.R. Cook* <sup>1</sup> , M.M. Ward <sup>1</sup> , and T.M. Fakler <sup>2</sup> , <sup>1</sup> Akey, Inc., <sup>2</sup> Zinpro Corporation, Eden Prairie, MN.
8:15	202	Effect of copper citrate (CC) and copper sulfate (CS) level on growth performance in weaned pigs. D.R. Cook* <sup>1</sup> , T.A. Armstrong <sup>2</sup> , J.W. Spears <sup>2</sup> , and M.M. Ward <sup>1</sup> , <sup>1</sup> Akey, Inc., <sup>2</sup> North Carolina State University, Raleigh.
8:30	203	Effect of copper source on performance of weanling pigs. C. V. Maxwell <sup>1</sup> , D. C. Brown* <sup>1</sup> , M. E. Davis <sup>1</sup> , Z. B. Johnson <sup>1</sup> , and T. M. Fakler <sup>2</sup> , <sup>1</sup> University of Arkansas, Fayetteville, <sup>2</sup> Zinpro Corp., Eden Prairie, MN.

- 8:45 204 Copper complexes improve performance of weanling pigs. T. M. Fakler\*<sup>1</sup>, C. J. Rapp<sup>1</sup>, and D. Fremaut<sup>2</sup>, <sup>1</sup>Zinpro Corp., Eden Prairie, MN, <sup>2</sup>Technical University of Gent, Belgium.
- 9:00 205 Efficacy of tetrabasic zinc chloride as a growth promoter for young pigs. D. M. Weibel\*<sup>1</sup>, I. Mavromichalis<sup>2</sup>, E. N. Parr<sup>1</sup>, and D. H. Baker<sup>2</sup>, <sup>1</sup>United Feeds, Inc., Sheridan, IN, <sup>2</sup>University of Illinois, Urbana.
- 9:15 206 Effect of feeding nursery pigs organic or inorganic sources of zinc on nutrient balance. C. L. Case\* and M. S. Carlson<sup>1</sup>, University of Missouri.
- 9:30 207 Pharmacological additions of zinc to nursery diets and subsequent skeletal integrity in finishing gilts. T.D. Crenshaw\* and D.K. Schneider, University of Wisconsin, Madison.
- 9:45 208 The effects of supplementing zinc and soybean oil to the diets of weanling pigs on growth performance. C. R. Dove\*, University of Georgia, Tifton.
- 10:00 BREAK
- 10:15 209 Efficacy of mannan oligosaccharide (Bio-Mos®) as a complete or partial replacement for zinc oxide in the diets of weanling pigs. M. E. Davis\*<sup>1</sup>, D. C. Brown<sup>1</sup>, C. V. Maxwell<sup>1</sup>, Z. B. Johnson<sup>1</sup>, and R. A. Dvorak<sup>2</sup>, <sup>1</sup>University of Arkansas, Fayetteville, <sup>2</sup>Alltech, Nicholasville, KY.
- 10:30 210 Efficacy of brewers dried yeast as a source of mannanoligosaccharides, without and with organic acids, and of carbadox on performance and intestinal bacterial populations of weanling pigs. L. A. White\*, M. C. Newman, G. L. Cromwell, and M. D. Lindemann, University of Kentucky, Lexington.
- 10:45 211 Comparative effects of mannanoligosaccharide and an antibiotic in nursery diets on performance of pigs reared on three different farms. D. W. Rozeboom\*<sup>1</sup>, D. T. Shaw<sup>1</sup>, J. E. Pettigrew<sup>2</sup>, and A. Connolly<sup>3</sup>, <sup>1</sup>Michigan State University, East Lansing, <sup>2</sup>Pettigrew Consulting International, LCC, Louisiana, MO, <sup>3</sup>AllTech, Inc., Nicholasville, KY.
- 11:00 212 Effect of *Quillaja saponaria* extract on weanling pig growth performance and immune function during acute enteric disease challenge. J.L. Turner\*<sup>1</sup>, S.S. Dritz<sup>1</sup>, J.R. Werner<sup>1</sup>, C.M. Hill<sup>1</sup>, K. Skjolaas<sup>1</sup>, K. Herkelman<sup>2</sup>, and J.E. Minton<sup>1</sup>, <sup>1</sup>Kansas State University, Manhattan, <sup>2</sup>Farmland Industries, Inc., Kansas City MO.
- 11:15 213 Effect of seaweed extract on weanling pig growth performance and immune function during acute enteric disease challenge. J.L. Turner\*, S.S. Dritz, J.R. Werner, C.M. Hill, K. Skjolaas, and J.E. Minton, Kansas State University, Manhattan.

## Odor and Nutrient Management I

Chair: Wendy Powers, Iowa State University, Ames

Tuesday, 9:45 a.m. - Noon

Room: 134

- | Time  | Abstract Number | Paper  |
|-------|-----------------|--|
| 9:45  | 238             | Effects of dietary manipulation on pig performance, manure composition, aerial ammonia, hydrogen sulfide, and odor levels in swine buildings. D. C. Kendall* <sup>1</sup> , B. T. Richert <sup>1</sup> , K. A. Bowers <sup>1</sup> , S. A. DeCamp <sup>1</sup> , C. T. Herr <sup>1</sup> , T. E. Weber <sup>1</sup> , D. Kelly <sup>1</sup> , A. L. Sutton <sup>1</sup> , D. W. Bundy <sup>2</sup> , and W. J. Powers <sup>2</sup> , <sup>1</sup> Purdue University, West Lafayette, IN, <sup>2</sup> Iowa State University, Ames. |
| 10:00 | 239             | Dietary manipulation to reduce aerial ammonia concentration in nursery pig facilities. J. J. Colina*, A. J. Lewis, P. S. Miller, and R. L. Fischer, University of Nebraska, Lincoln.   |
| 10:15 | 240             | Nitrogen balance of pigs fed low-protein amino acid supplemented diets with different soybean fractions. B.W. Senne*, S.D. Carter, R.W. Fent, and M.J. Rincker, Oklahoma State University, Stillwater.   |
| 10:30 | 241             | Reduction of odorous compounds in pig manure through dietary fiber manipulation. S.L. Hankins* <sup>1</sup> , A.L. Sutton <sup>1</sup> , J.A. Patterson <sup>1</sup> , B.T. Richert <sup>1</sup> , A.J. Heber <sup>1</sup> , D.T. Kelly <sup>1</sup> , K.B. Kephart <sup>2</sup> , R. Mumma <sup>2</sup> , E. Bogus <sup>2</sup> , and S.D. Carter <sup>3</sup> , <sup>1</sup> Purdue University, <sup>2</sup> Pennsylvania State University, <sup>3</sup> Oklahoma State University.  |
| 10:45 | 242             | Comparison of nutrient retention to total collection for determination of nutrient excretion. J.D. Spencer <sup>1</sup> , J.W. Frank <sup>1</sup> , A.M. Gaines* <sup>1</sup> , and G.L. Allee <sup>1</sup> , <sup>1</sup> University of Missouri.   |

- 11:00 243 Composting feedlot and dairy manure as a manure management alternative: Compost characteristics, crop yields, and nutrient recoveries. G. E. Erickson\*<sup>1</sup>, T. J. Klopfenstein<sup>1</sup>, W. Luedtke<sup>1</sup>, and G. Lesoing<sup>2</sup>, <sup>1</sup>University of Nebraska-Lincoln, <sup>2</sup>University of Missouri.
- 11:15 244 Effect of ractopamine and dietary crude protein on nitrogen and phosphorus excretion from finishing pigs. S.A. DeCamp\*<sup>1</sup>, S.L. Hankins<sup>1</sup>, A. Carroll<sup>1</sup>, D.J. Ivers<sup>2</sup>, B.T. Richert<sup>1</sup>, A.L. Sutton<sup>1</sup>, and D.B. Anderson<sup>2</sup>, <sup>1</sup>Purdue University, <sup>2</sup>ELANCO Animal Health, A Division of Eli Lilly and Company.
- 11:30 245 Odor production in stored manure from ractopamine (RAC) fed pigs. S.L. Hankins\*<sup>1</sup>, S.A. DeCamp<sup>1</sup>, B.T. Richert<sup>1</sup>, D.B. Anderson<sup>2</sup>, D.J. Ivers<sup>2</sup>, A.J. Heber<sup>1</sup>, and A.L. Sutton<sup>1</sup>, <sup>1</sup>Purdue University, West Lafayette, IN, <sup>2</sup>Elanco Animal Health, A Division of Eli Lilly and Company, Greenfield, IN.
- 11:45 246 Abatement of Ammonia and Hydrogen Sulfide Emissions from a Swine Lagoon using a Polymer Biocover. J.A. Zahn\*<sup>1</sup>, A.E. Tung<sup>2</sup>, B.A. Roberts<sup>2</sup>, and J.L. Hatfield<sup>3</sup>, <sup>1</sup>National Swine Research Center - USDA-ARS, Ames, IA, <sup>2</sup>Monsanto, EnviroChem Systems Division, St. Louis, MO, <sup>3</sup>National Soil Tilth Laboratory - USDA-ARS, Ames, IA.

## Physiology I

### Estrus, Ovulation, and Pregnancy in Cattle

Chair: David Miller, University of Illinois, Urbana

Tuesday, 8:00 a.m. - 10:15 a.m.

Room: 136

Time	Abstract Number	Paper
8:00	247	Fixed-time insemination versus insemination after estrus in replacement beef heifers synchronized with GnRH, Norgestomet, and PGF <sub>2α</sub> . G. C. Lamb* <sup>1</sup> , L. R. Miller <sup>2</sup> , J. M. Cassady <sup>2</sup> , C. M. Zehnder <sup>2</sup> , and A. DiCostanzo <sup>2</sup> , <sup>1</sup> North Central Research and Outreach Center, University of Minnesota, Grand Rapids, <sup>2</sup> University of Minnesota, St. Paul.
8:15	248	Fixed-time insemination in peripuberal, light-weight replacement beef heifers synchronized with PGF <sub>2α</sub> and GnRH. C. R. Dahlen* <sup>1</sup> , G. C. Lamb <sup>2</sup> , C. M. Zehnder <sup>1</sup> , L. R. Miller <sup>1</sup> , and A. DiCostanzo <sup>1</sup> , <sup>1</sup> University of Minnesota, St. Paul, <sup>2</sup> North Central Research and Outreach Center, University of Minnesota, Grand Rapids.
8:30	249	A comparison of fixed-time insemination protocols for replacement beef heifers. F. N. Kojima*, M. F. Smith, S. L. Wood, M. S. Kerley, K. K. Graham, and D.J. Patterson, University of Missouri, Columbia.
8:45	250	Timed insemination in beef heifers after synchronization of estrus and ovulation with melengestrol acetate (MGA) and prostaglandin F <sub>2α</sub> . S.K. Johnson* and K.R. Harmoney, <sup>1</sup> Kansas State University, Hays,KS.
9:00	251	Improved fertility in noncycling lactating dairy cows treated with exogenous progesterone during Ovsynch. J. R. Pursley*, P. M. Fricke, H. A. Garverick, D. J. Kesler, J. S. Ottobre, J. S. Stevenson, and M. C. Wiltbank, NC-113 Regional Research Project.
9:15	252	Administration of estradiol benzoate at the onset of the CIDR/PGF estrus synchronization procedure increases pregnancy rates in cows but not heifers. T.L. Steckler* <sup>1</sup> , T.G. Nash <sup>1</sup> , J.M. Dahlquist <sup>1</sup> , T.F. Lock <sup>1</sup> , G.A. Bollero <sup>1</sup> , H.D. Hafs <sup>2</sup> , D.B. Faulkner <sup>1</sup> , and D.J. Kesler <sup>1</sup> , <sup>1</sup> University of Illinois, <sup>2</sup> Rutgers University.
9:30	253	Effects of maturity of the potential ovulatory follicle on the ability of estradiol benzoate (EB) to stimulate estrus, ovulation and luteal development in anestrous beef cows. CR Burke* <sup>1,2</sup> , ML Mussard <sup>1</sup> , and ML Day <sup>1</sup> , <sup>1</sup> The Ohio State University, Columbus OH, <sup>2</sup> Dairying Research Corporation, Hamilton, New Zealand.
9:45	254	Accuracy of a commercially available Early Conception Factor (ECF <sup>TM</sup> ) test for determining pregnancy status of inseminated and noninseminated dairy cattle. M. C. Cordoba* <sup>1</sup> , R. Sartori <sup>1</sup> , and P. M. Fricke <sup>1</sup> , <sup>1</sup> University of Wisconsin-Madison.
10:00	255	Use of a vaginal mucus electrical resistance probe to alter insemination time and calf gender distribution in dairy heifers. M.L. Pugh, K.R. Sieren, L.L. Timms*, and C.R. Youngs, Iowa State University, Ames.

# Physiology II

## Pig Reproduction

Chair: David Miller, University of Illinois, Urbana

Tuesday, 10:30 a.m. - Noon

Room: 136

Time	Abstract Number	Paper
10:30	256	Selection for increased placental efficiency (PE) results in increased placental expression of vascular endothelial growth factor (VEGF) in the pig. K.A. Vonnahme* and S.P. Ford, Iowa State University.
10:45	257	Are hematocrit and placental efficiency selection tools for uterine capacity in swine? J. L. Vallet*, K. A. Leymaster, J. P. Cassady, and R. K. Christenson, USDA, ARS, RLH U.S. Meat Animal Research Center, Clay Center, Nebraska.
11:00	258	Relationship Among Placental Vascularity, Fetal Growth and Offspring Number in Sheep. D.R. Arnold*, J.D. Kirsch, K.C. Kraft, D.A. Redmer, and L.P. Reynolds, North Dakota State University, Fargo, North Dakota.
11:15	259	Selection for Greater Number of Corpora Lutea in Gilts Increased Plasma Follicle-Stimulating Hormone Concentrations in Prepubertal Development. J. J. Ford* <sup>1</sup> , D. R. Zimmerman <sup>2</sup> , T. H. Wise <sup>1</sup> , K. A. Leymaster <sup>1</sup> , and R. K. Christenson <sup>1</sup> , <sup>1</sup> USDA, ARS, RLH US Meat Animal Research Center, <sup>2</sup> University of Nebraska, Lincoln.
11:30	260	Effects of estradiol (E) on follicular growth in neonatal pigs. P. E. Davis* and M. C. Lucy, University of Missouri, Columbia.
11:45	261	Characterization of uterine porcine amphiregulin. J. G. Kim*, J. L. Vallet, G. A. Rohrer, and R. K. Christenson, USDA, ARS, U.S. Meat Animal Research Center, Clay Center, Nebraska.

# Ruminant Nutrition and Forages I

## Posters

Tuesday, 8:00 a.m. - 5:00 p.m.

Authors present: Even Abstract Numbers 8:00 a.m. - 10:00 a.m.

Odd Abstract Numbers 10:00 a.m. - Noon

Room: Exhibit Hall, Room 206

Abstract Number	Paper
280	Efficacy of pelleted wheat midds amended with food waste as a protein and energy substitute for beef cows. P.M. Walker*, Illinois State University, Normal.
281	Influence of concentrated separator by-product (CSB) on intake, digestion, and nitrogen balance in wether lambs. S. M. Shellito*, J. S. Caton, C. Navanukraw, H. B. Encinas, E. R. Loe, and M. L. Bauer, North Dakota State University, Fargo.
282	Bread by-product for growing beef steers: Effects on steer performance and by-product variability. W.W. Dvorak*, M.L. Bauer, G.P. Lardy, and E.R. Loe, North Dakota State University, Fargo.
283	Self-fed wheat middlings in backgrounding diets for beef heifers. T. Gilbery* <sup>1</sup> , G. Lardy <sup>1</sup> , B. Kreft <sup>2</sup> , J. Dhuyvetter <sup>3</sup> , and M. Bauer <sup>1</sup> , <sup>1</sup> North Dakota State University, Fargo, <sup>2</sup> Streeter, <sup>3</sup> Minot.
284	Effect of feeding hull-less oats with varying levels of rumen-undegradable protein on performance of early lactation Holstein cows. D.B. Carlson*, J.W. Schroeder, D.E. Schimek, M.S. Laubach, W.L. Keller, and C.S. Park, North Dakota State University, Fargo.
285	Carbohydrate composition of commonly used feedstuffs in the Midwestern US. D. Kleischmit* and R. Grant, University of Nebraska, Lincoln.

- 286 Response of feedlot steers to diets containing bloodmeal and choice white grease. J. W. Lehmkuhler\*, E.E.D. Felton, C.J. Fu, S. Weber, and M. S. Kerley, University of Missouri.
- 287 Effects of two protein supplementation systems on performance and carcass characteristics of feedlot steers. L.R. Miller\*<sup>1</sup>, A. DiCostanzo<sup>1</sup>, C.M. Zehnder<sup>1</sup>, G.C. Lamb<sup>2</sup>, and L. Smith<sup>3</sup>, <sup>1</sup>University of Minnesota, St Paul, <sup>2</sup>North Central Research and Outreach Center, Grand Rapids, <sup>3</sup>Northwest Research and Outreach Center, Crookston.
- 288 Influence of implant strategy and supplemental undegradable intake protein on growth and carcass characteristics of steers. P. A. Ludden\*, D. L. Hixon, and W. J. Means, University of Wyoming, Laramie.
- 289 Evaluation of Ralgro® during the stocker period on pasture and feedlot performance of Mexican crossbred steers. D. A. Blasi\*<sup>1</sup>, S. I. Paisley<sup>1</sup>, G. L. Kuhl<sup>1</sup>, M. L. Dikeman<sup>1</sup>, J. Higgins<sup>1</sup>, G. L. Huck<sup>1</sup>, T. B. Farran<sup>1</sup>, J. J. Sindt<sup>1</sup>, S.P. Montgomery<sup>1</sup>, and C. Birkelo<sup>2</sup>, <sup>1</sup>Kansas State University, <sup>2</sup>Schering-Plough Animal Health.
- 290 The effect of integrating pasturing systems into cattle finishing programs and affect on meat quality. T. A. Williams\* and M. P. Hoffman, Iowa State University.
- 291 Effects of forage type on intake, digestion, and in situ rate of NDF and CP disappearance in beef steers. J. E. Leonard, M. L. Bauer, V. I. Burke, T. C. Gilbery, G. P. Lardy, and J. S. Caton\*, North Dakota State University, Fargo.
- 292 Effect of starch, fiber, or degradable intake protein (DIP) supplementation on NDF and ADF digestibility by heifers consuming fescue hay. M. L. Linville\*, K. C. Olson, and J. E. Williams, University of Missouri, Columbia.
- 293 Effect of ruminal infusion of degradable intake protein and starch on utilization of low-quality prairie hay by beef steers. E. A. Klevesahl\*, R. C. Cochran, E. C. Titgemeyer, T. A. Wickersham, C. G. Farmer, J. I. Arroquy, and D. E. Johnson, Kansas State University, Manhattan.
- 294 Impact of frequency of supplementation on ruminal fermentation in beef steers consuming low-quality, tallgrass-prairie forage. C. G. Farmer\*<sup>1</sup>, R. C. Cochran<sup>1</sup>, D. D. Simms<sup>2</sup>, E. A. Klevesahl<sup>1</sup>, and T. A. Wickersham<sup>1</sup>, <sup>1</sup>Kansas State University, Manhattan, <sup>2</sup>Consolidated Nutrition, Omaha, NE.
- 295 Effect of cooked molasses tubs on performance and health of newly-received stocker cattle. S. Paisley\*, G. Stokka, and F. Brazle, Kansas State University.
- 296 Effect of low-level fall supplementation with a self-fed, high-protein product and level of winter supplementation on the performance of beef cows grazing tallgrass-prairie range. T.A. Wickersham\*<sup>1</sup>, R.C. Cochran<sup>1</sup>, D.V. Dhuyvetter<sup>2</sup>, D.M. Grieger<sup>1</sup>, and C.G. Farmer<sup>1</sup>, <sup>1</sup>Kansas State University, Manhattan, <sup>2</sup>Farmland Industry, Kansas City, MO.
- 297 Using orchardgrass and endophyte-free fescue versus infected fescue overseeded on bermudagrass for cow herds. W. K. Coblentz\*<sup>1</sup>, K. P. Coffey<sup>1</sup>, T. F. Smith<sup>2</sup>, D. A. Scarbrough<sup>1</sup>, J. B. Humphry<sup>1</sup>, D. S. Hubbell, III<sup>2</sup>, J. D. Martin<sup>2</sup>, J. E. Turner<sup>1</sup>, K. F. Harrison<sup>2</sup>, and D. H. Hellwig<sup>1</sup>, <sup>1</sup>University of Arkansas, Fayetteville, <sup>2</sup>Livestock and Forestry Branch Station, Batesville.
- 298 Effect of grazing bermudagrass pastures overseeded with endophyte-free or infected fescue or orchardgrass at two rotation intensities on calf weight change during weaning. K. P. Coffey\*<sup>1</sup>, W. K. Coblentz<sup>1</sup>, D. H. Hellwig<sup>1</sup>, T. F. Smith<sup>2</sup>, D. S. Hubbell, III<sup>2</sup>, J. D. Martin<sup>2</sup>, S. L. Krumpelman<sup>1</sup>, K. F. Harrison<sup>2</sup>, D. A. Scarbrough<sup>1</sup>, and J. B. Humphry<sup>1</sup>, <sup>1</sup>University of Arkansas, Fayetteville, <sup>2</sup>Livestock and Forestry Branch Experiment Station, Batesville.
- 299 Evaluation of winter forage management systems for spring- and fall-calving cows. N. A. Janovick\* and J. R. Russell, Iowa State University.
- 300 Effects of grazing crop residues from Bt-corn hybrids on pregnant beef cows. J. R. Russell\*<sup>1</sup>, M. J. Hersom<sup>2</sup>, M. M. Haan<sup>1</sup>, M.L. Kruse<sup>1</sup>, and D. G. Morrical<sup>1</sup>, <sup>1</sup>Iowa State University, <sup>2</sup>Oklahoma State University.
- 301 Bt corn that is genetically modified to prevent insect damage is equal to conventional corn in feeding value for beef cattle. M.S. Kerley\*<sup>1</sup>, E.E.D. Felton<sup>1</sup>, J.W. Lehmkuhler<sup>1</sup>, and R. Shillito<sup>2</sup>, <sup>1</sup>University of Missouri, Columbia, <sup>2</sup>Aventis CropScience.
- 302 Long-chain fatty acid flow in and digestion by beef steers fed dry-rolled or high-moisture typical or high-oil corn diets. M. R. Bolte\*<sup>1</sup>, E. J. Scholljegerdes<sup>1</sup>, B. W. Hess<sup>1</sup>, J. Gould<sup>1</sup>, D. C. Rule<sup>1</sup>, and F. N. Owens<sup>2</sup>, <sup>1</sup>University of Wyoming, Laramie, Wyoming, <sup>2</sup>DuPont Specialty Grains, Des Moines, Iowa.
- 303 Site and extent of digestion of dry-rolled or high-moisture typical or high-oil corn diets by beef steers. E. J. Scholljegerdes\*<sup>1</sup>, B. W. Hess<sup>1</sup>, J. Gould<sup>1</sup>, and F. N. Owens<sup>2</sup>, <sup>1</sup>University of Wyoming, Laramie, Wyoming, <sup>2</sup>DuPont Specialty Grains, Des Moines, Iowa.
- 304 Impact of spontaneous heating during storage of bermudagrass hay on in situ disappearance of DM, fiber, and nitrogen. L. J. McBeth\*, K. P. Coffey, W. K. Coblentz, J. E. Turner, D. A. Scarbrough, D. H. Hellwig, and D. W. Kellogg, University of Arkansas, Fayetteville.

- 305 Application of a fermentation aid (Silo-King®) at increasing rates on the availability of nutrients from alfalfa haylage. 1. Digestibility of dry matter, protein, and fiber. G. Ayangbile, D. P. Casper\*, J. Meier, and D. Spangler, Agri-King, Inc., Fulton, IL.
- 306 Application of a fermentation aid (Silo-King®) at increasing rates on the availability of nutrients from alfalfa haylage. 2. Digestibility of minerals. D. P. Casper\*, G. Ayangbile, J. Meier, and D. Spangler, Agri-King, Inc., Fulton, IL.
- 307 Application of a fermentation aid (Silo-King®) at increasing rates on the availability of nutrients from alfalfa haylage. 3. Ruminal fermentation and solubility parameters. J. Meier, G. Ayangbile, D. P. Casper\*, and D. Spangler, Agri-King, Inc., Fulton, IL.
- 308 Synchronization of nonstructural carbohydrate and protein degradability on ruminal fermentation in rumen-simulating fermenters. D. P. Casper\*<sup>1</sup>, D. J. Schingoethe<sup>2</sup>, and G. A. Harrison<sup>2</sup>, <sup>1</sup>Agri-King, Inc., Fulton, IL, <sup>2</sup>South Dakota State University.
- 309 Potential degradation of leafy spurge toxins in cattle rumen digesta. M.B. Hubert\*<sup>1</sup>, S.L. Kronberg<sup>2</sup>, and F.T. Halaweish<sup>1</sup>, <sup>1</sup>South Dakota State University, <sup>2</sup>USDA ARS.
- 310 Effects of monensin on eating behavior when administered continuously into the rumen or portal vein. S. Bierman\* and R.H. Pritchard, South Dakota State University.

## Ruminant Nutrition and Forages II

### Feedlot Nutrition

Chair: Todd Milton, Midwest PMS, Walton, NE

Tuesday, 8:00 a.m. - Noon

Room: 205J

Time	Abstract Number	Paper
8:00	311	Benefits of sorting calves as feeders on feedlot performance and carcass value. A. Trenkle*, Iowa State University.
8:15	312	Effect of age at feedlot entry on performance and carcass characteristics of bulls and steers. J. P. Schoonmaker*, F. L. Fluharty, S. C. Loerch, and T. B. Turner, The Ohio State University.
8:30	313	Effect of rate of liveweight gain during winter on subsequent feedlot performance of cattle. M. J. Hersom*, G. W. Horn, and C. R. Krehbiel, Oklahoma State University.
8:45	314	Effect of altered feeding regimen on performance and body temperature of steers finished in the summer. M. S. Davis* <sup>1</sup> , T. L. Mader <sup>1</sup> , S. M. Holt <sup>2</sup> , and W. M. Cerkoney <sup>1</sup> , <sup>1</sup> University of Nebraska, Concord, <sup>2</sup> University of Queensland-Gatton, Gatton, Australia.
9:00	315	Effect of conventional vs. restricted adaptation to a high-concentrate diet on performance and carcass characteristics of feedlot calves. W. T. Choat*, C. R. Krehbiel, D. R. Gill, T. C. Stovall, J. A. Shriver, and R. L. Ball, <sup>1</sup> Oklahoma State University.
9:15	316	Influence of restricted intake and reduced dietary starch on colon pH and <i>E. coli</i> prevalence. J.D. Folmer*, C.B. Wilson, D.L. Bailey, M.P. Blackford, T.W. Loy, S.M. Younts, R.A. Moxley, D.R. Smith, and T.J. Klopfenstein, University of Nebraska, Lincoln.
9:30	317	Comparison of Synovex® Plus™, Revalor®-H, and Finaplix®-H in feedlot heifers fed MGA®. C.N. Macken* <sup>1</sup> , C.T. Milton <sup>1</sup> , B.D. Dicke <sup>2</sup> , and F.L. Prouty <sup>3</sup> , <sup>1</sup> University of Nebraska, Lincoln, <sup>2</sup> Cattlemen's Consulting, Lincoln, <sup>3</sup> Fort Dodge Animal Health, Overland Park, KS.
9:45	318	Effect of implanting on performance and carcass characteristics of finishing steers. W. T. Choat*, C. R. Krehbiel, D. R. Gill, T. C. Stovall, J. A. Shriver, and R. L. Ball, Oklahoma State University.
10:00		BREAK
10:15	319	Effect of corn type and implant status on feedlot performance and carcass characteristics of beef steers. M.S. Eibs* <sup>1</sup> , B.J. Johnson <sup>2</sup> , and B.D. Rops <sup>1</sup> , <sup>1</sup> South Dakota State University, <sup>2</sup> Kansas State University.

- 10:30 320 Feeding value of Bt corn grain compared with its parental hybrid when fed in beef cattle finishing diets. A.T. Petty\*<sup>1</sup>, K.S. Hendrix<sup>1</sup>, E.P. Stanisiewski<sup>2</sup>, and G.F. Hartnell<sup>2</sup>, <sup>1</sup>Purdue University, West Lafayette, IN, <sup>2</sup>Monsanto Company, St. Louis, MO.
- 10:45 321 Performance of beef cattle fed Roundup Ready® corn harvested as whole plant silage or grain. A.T. Petty\*<sup>1</sup>, K.S. Hendrix<sup>1</sup>, E.P. Stanisiewski<sup>2</sup>, and G.F. Hartnell<sup>2</sup>, <sup>1</sup>Purdue University, West Lafayette, IN, <sup>2</sup>Monsanto Company, St. Louis, MO.
- 11:00 322 Effects of a slow-release urea product on performance and carcass characteristics of feedlot cattle. G. C. Duff\*, D. A. Walker, K. J. Malcolm-Callis, M. W. Wiseman, and J. D. Rivera, Clayton Livestock Research Center, New Mexico State University.
- 11:15 323 Effect of corn and barley processing on performance of steers fed wet corn gluten feed (WCGF) based diets. E. R. Loe\*<sup>1</sup>, M. L. Bauer<sup>1</sup>, G. P. Lardy<sup>1</sup>, and R. A. Stock<sup>2</sup>, <sup>1</sup>North Dakota State University, Fargo, <sup>2</sup>Cargill Corn Milling, Blair, NE.
- 11:30 324 Utilization of malting industry byproducts on cattle feedlot diets. C.R. Dahlen<sup>1</sup>, C.M. Zehnder\*<sup>1</sup>, D. Ziegler<sup>2</sup>, A. DiCostanzo<sup>1</sup>, L.R. Miller<sup>1</sup>, H. Chester-Jones<sup>2</sup>, and G.C. Lamb<sup>3</sup>, <sup>1</sup>University of Minnesota, St. Paul, <sup>2</sup>Southern Research and Outreach Center, Waseca, <sup>3</sup>North Central Research and Outreach Center, Grand Rapids.
- 11:45 325 Phosphorus requirements of finishing steer calves. G. E. Erickson\*<sup>1</sup>, T. J. Klopfenstein<sup>1</sup>, M. W. Orth<sup>2</sup>, D. Brink<sup>1</sup>, and K. M. Whittet<sup>1</sup>, <sup>1</sup>University of Nebraska, Lincoln, <sup>2</sup>Michigan State University.

## **Animal Behavior, Housing, and Well-Being III**

### **Feed Additives and Food Safety Relative to Animal Well-Being**

Chair: Michael Ellis, University of Illinois, Urbana

Tuesday, 1:00 p.m. – 2:15 p.m.

Room: 205D

Time	Abstract Number	Paper
1:00	8	Effect of fish oil supplementation on the young pig's immunological response to an endotoxic challenge. J.A. Carroll* <sup>1</sup> , K.L. Fritsche <sup>2</sup> , J.D. Spencer <sup>2</sup> , A.M. Gaines <sup>2</sup> , G.L. Allee <sup>2</sup> , R.L. Matteri <sup>1</sup> , H.G. Kattesh <sup>3</sup> , M.P. Roberts <sup>3</sup> , L.A. Beausang <sup>4</sup> , and M.E. Zannelli <sup>4</sup> , <sup>1</sup> ARS-USDA, Columbia, Missouri, <sup>2</sup> University of Missouri-Columbia, <sup>3</sup> University of Tennessee-Knoxville, <sup>4</sup> Pierce-Endogen, Inc., Woburn, MA.
1:15	9	Supplemental Vitamin C and Beta-glucan alter growth and the LPS-induced immunological response in young pigs. C.A. McKee* <sup>1</sup> , J.A. Carroll <sup>2</sup> , S.D. Eicher <sup>1</sup> , M.E. Zannelli <sup>3</sup> , L.A. Beausang <sup>3</sup> , and R.L. Matteri <sup>2</sup> , <sup>1</sup> Livestock Behavior Research Unit, ARS-USDA, West Lafayette, IN, <sup>2</sup> Animal Physiology Research Unit, ARS-USDA, Columbia, MO, <sup>3</sup> Pierce-Endogen, Woburn, MA.
1:30	10	Spring and summer investigation of verotoxin-producing <i>Escherichia coli</i> (VTEC) in grazing sheep previously infected with VTEC. H. S. Hussein*, B. H. Thran, and H. A. Glimp, University of Nevada-Reno.
1:45	11	Non-O157:H7 verotoxin-producing <i>Escherichia coli</i> in sheep grazing an irrigated pasture. B. H. Thran*, H. S. Hussein, and H. A. Glimp, University of Nevada-Reno.
2:00	12	Subcutaneously injected glucagon affects selected blood constituents in dairy cows. B. N. Ametaj* <sup>1</sup> , G. Bobe <sup>1</sup> , S.L. Oren <sup>1</sup> , O. Rosendo <sup>2</sup> , D. C. Beitz <sup>1</sup> , and J. W. Young <sup>1</sup> , <sup>1</sup> Iowa State University, <sup>2</sup> University of Florida.

# Breeding and Genetics II

## Swine Breeding

Chair: Cathy Ernst, Michigan State University, East Lansing

Tuesday, 1:00 p.m. - 4:45 p.m.

Room: 205E

Time	Abstract Number	Paper
1:00	21	Mapping microsatellite markers identified in porcine EST sequences. G. A. Rohrer* <sup>1</sup> , S. C. Fahrenkrug <sup>1</sup> , N. Tao <sup>2</sup> , and W. C. Warren <sup>2</sup> , <sup>1</sup> USDA, ARS, U.S. Meat Animal Research Center, Clay Center, NE USA, <sup>2</sup> Monsanto Co., St. Louis, MO USA.
1:15	22	Mapping expressed sequence tags (ESTs) in pigs using single nucleotide polymorphisms (SNPs). B. A. Freking*, S. C. Fahrenkrug, G. A. Rohrer, T. P. L. Smith, and J. W. Keele, Roman L. Hruska U.S. Meat Animal Research Center.
1:30	23	Comparative Mapping of the Porcine X Chromosome. S. A. McCoard*, S. C. Fahrenkrug, B. A. Freking, G. A. Rohrer, T. H. Wise, and J. J. Ford <sup>5</sup> , USDA, ARS, RLH US Meat Animal Research Center.
1:45	24	Effect of boar exposure during insemination on factors influencing fertility in gilts. K.L. Willenburg*, G.M. Miller, and R.V. Knox, University of Illinois, Urbana.
2:00	25	Reproductive responses in the NE Index line estimated in pure line and crossbred litters. D. Petry* and R. Johnson, University of Nebraska.
2:15	26	Pregnancy diagnosis in swine: a comparison between transrectal and transabdominal real-time ultrasound. G.M. Miller*, K.L. Willenburg, and R.V. Knox, University of Illinois, Urbana.
2:30	27	Methods for editing and adjusting feed intake data from electronic swine feeders. D.S. Casey* and J.C.M. Dekkers, Iowa State University, Ames.
2:45		BREAK
3:00	28	Growth and carcass responses in the NE Index line estimated in pure line and crossbred litters. D. Petry* <sup>1</sup> , J. Holl <sup>2</sup> , and R. Johnson <sup>1</sup> , <sup>1</sup> University of Nebraska, <sup>2</sup> North Carolina State University.
3:15	29	Breed differences of porcine longissimus dorsi soluble myoglobin concentration. R. N. Goodwin* <sup>1</sup> , B. R. Weigand <sup>2</sup> , and F. C. Parrish <sup>3</sup> , <sup>1</sup> National Pork Producer's Council, <sup>2</sup> Illinois State University, <sup>3</sup> Iowa State University.
3:30	30	Evaluation of Duroc vs. Pietrain sired progeny: I. growth parameters. D. B. Edwards*, R. O. Bates, P. M. Saama, and R. J. Tempelman, Michigan State University, E. Lansing.
3:45	31	Prediction of Percent Intramuscular Fat in Live Swine. D. Newcom*, A. Hassen, T.J. Baas, D.E. Wilson, G.H. Rouse, and C.L. Hays, Iowa State University, Ames.
4:00	32	A response surface estimated from the regression of standard cut and boneless pork primal yield on carcass backfat, loin depth and carcass weight measured on-line. H. I. Sellers* <sup>1</sup> , R. N. Goodwin <sup>1</sup> , and E. P. Berg <sup>2</sup> , <sup>1</sup> National Pork Producers Council, Des Moines, IA, <sup>2</sup> University of Missouri, Columbia.
4:15	33	Breed and fresh quality trait effects on dry-cured processed hams. K. J. Stalder* <sup>1</sup> , C. C. Melton <sup>1</sup> , G. E. Conatser <sup>1</sup> , S. L. Melton <sup>1</sup> , J. R. Mount <sup>1</sup> , M. P. Penfield <sup>1</sup> , D. Murphey <sup>2</sup> , and K. J. Goddard <sup>3</sup> , <sup>1</sup> University of Tennessee, Knoxville, <sup>2</sup> Tennessee Valley Meats, Paris, TN, <sup>3</sup> University of Tennessee, Paris.
4:30	34	Analysis of sow productivity in Costa Rica. M.D. Hoge* <sup>1</sup> , R.O. Bates <sup>1</sup> , and J. Camacho-Sandoval <sup>2</sup> , <sup>1</sup> Michigan State University, East Lansing, <sup>2</sup> Universidad Nacional, Heredia/Costa Rica.

# Breeding and Genetics III

## Posters

Tuesday 8:00 a.m. - 5:00 p.m.  
Authors present 1:00 p.m. - 3:00 p.m.  
Room: Exhibit Hall, Room 206

Abstract Number	Paper
35	Genetic evaluation of Holstein sires for incidence of twins. J. M. Johanson* <sup>1</sup> , P. J. Berger <sup>1</sup> , B. W. Kirkpatrick <sup>2</sup> , and M. R. Dentine <sup>2</sup> , <sup>1</sup> Iowa State University, <sup>2</sup> University of Wisconsin, Madison.
36	Genetic parameter estimates for breeding soundness traits in yearling Angus bulls. R. A. Christmas, D. W. Moser*, M. F. Spire, J. M. Sargeant, and S. K. Tucker, Kansas State University, Manhattan.
37	Relationship of genetic variants in the ovine calpain regulatory gene with growth. H. Chung, M. Davis*, and H. Hines, The Ohio State University.
38	Effects of calpastatin genotypes on growth and IGF-I concentration of Angus bulls. M. Davis*, H. Chung, and H. Hines, The Ohio State University.
39	Comparison of selective DNA pooling with selective genotyping for QTL mapping. H. H. Zhao*, J. Wang, and J.C.M. Dekkers, Iowa State University, Ames.
40	Evaluation of Duroc vs. Pietrain sired progeny: II. carcass measurements. D. B. Edwards*, R. O. Bates, and W. N. Osburn, Michigan State University, E. Lansing.
41	A polymorphism identified in the 5' flanking region of the ovine IGF-I gene by PCR-SSCP analysis. A. Yilmaz*, M. E. Davis, and H. C. Hines, The Ohio State University, Columbus.

## Extension III

Chair: Lee Johnston, University of Minnesota, Morris

Tuesday, 1:00 p.m. - 2:30 p.m.  
Room: 134

Time	Abstract Number	Paper
1:00	60	Trends associated with Marbling Score, Fat Cover and, CAB Acceptance Rate. M. F. Scott*, D. E. Wilson, and G. H. Rouse, Iowa State University.
1:15	61	Centralized ultrasound processing to evaluate beef cattle for body composition, an update for 2000. R. G. Tait, Jr*, G. H. Rouse, D. E. Wilson, C. L. Hays, A. T. Hassen, and V. R. Amin, Iowa State University, Ames.
1:30	62	<b>NPPC Innovation Award – Education</b> Development of a quality lean index for ranking pork carcasses in a contest setting. C. A. Stahl* <sup>1</sup> , E. P. Berg <sup>1</sup> , W. R. Lamberson <sup>1</sup> , and T. J. Safranski <sup>1</sup> , <sup>1</sup> University of Missouri-Columbia.
1:45	63	Critical control points for profitability in the cow-calf enterprise. A.J. Miller* <sup>1</sup> , D.B. Faulkner <sup>1</sup> , R.K. Knipe <sup>1</sup> , D.R. Strohhahn <sup>2</sup> , D.F. Parrett <sup>1</sup> , and L.L. Berger <sup>1</sup> , <sup>1</sup> University of Illinois, <sup>2</sup> Iowa State University.
2:00	64	Enhancing the viability of Missouri dairy farms. S.A. Hamilton <sup>1</sup> , T.R. Rickard*, R.L. Kallenbach, C.A. Roberts, G.J. Bishop-Hurley, and B.J. Steevens, <sup>1</sup> University of Missouri.
2:15	65	Animal handling procedures and facilities used by dairy producers to conduct health and reproductive examinations. A. Wagner* <sup>1</sup> and R.W. Palmer <sup>1</sup> , <sup>1</sup> University of Wisconsin-Madison.

## Extension IV

### Symposium: Weaning Management Systems for Improving Beef Quality

Chair: Dan B. Faulkner, University of Illinois, Urbana

Tuesday, 2:30 p.m. - 5:00 p.m.

Room: 134

Time	Abstract Number	Paper
2:30	66	INVITED Early weaning calves to produce quality beef. D. B. Faulkner <sup>1</sup> , L. L. Berger <sup>1</sup> , and N. A. Pyatt <sup>1</sup> , <sup>1</sup> University of Illinois, Urbana.
3:15	67	INVITED Early weaning can affect rate of marbling deposition, relationship of intramuscular and subcutaneous fat deposition and feed efficiency of feedlot cattle. L.L. Berger* <sup>1</sup> , A.W. Wertz <sup>1</sup> , and D.B. Faulkner <sup>1</sup> , <sup>1</sup> University of Illinois.
4:00	68	INVITED Early weaning, puberty and cow reproduction. M.L. Day*, J.E. Huston, and D.E. Grum, The Ohio State University.
4:30	69	Accelerated finishing systems for the production of high quality beef. R. S. Wells* <sup>1</sup> , D. B. Faulkner <sup>1</sup> , F. A. Ireland <sup>1</sup> , and M. J. Cecava <sup>2</sup> , <sup>1</sup> University of Illinois, Urbana, <sup>2</sup> Consolidated Nutrition, Fort Wayne, IN.
4:45	70	Feedlot performance and carcass traits of early weaned steers supplemented with either laidlomycin propionate or monensin. J.D. Arseneau* <sup>1</sup> , L.L. Berger <sup>2</sup> , D.D. Buskirk <sup>3</sup> , D.B. Faulkner <sup>2</sup> , F.L. Fluharty <sup>4</sup> , R.P. Lemenager <sup>1</sup> , S.C. Loerch <sup>4</sup> , S.R. Rust <sup>3</sup> , and M.N. Streeter <sup>5</sup> , <sup>1</sup> Purdue University, West Lafayette, IN, <sup>2</sup> University of Illinois, Urbana, <sup>3</sup> Michigan State University, East Lansing, <sup>4</sup> The Ohio State University, Wooster, <sup>5</sup> Alpharma, Inc., Ft. Lee, NJ.

## Graduate Student Competitive Research Papers

### Ph.D. Division

Chair: Milo Wiltbank, University of Wisconsin, Madison

Tuesday, 2:30 p.m. - 4:30 p.m.

Room: 140

Time	Abstract Number	Paper
2:30	93	Defining the molecular weight cut-off for in vitro digestible protein assay by comparison of the size distributions of the homoarginine-labeled soluble peptides of meat and bone meal digested in vitro and in vivo. Y.R. Qiao* and T.A. van Kempen, North Carolina State University.
2:45	94	Economic analysis of calf- versus yearling-finishing. D. J. Jordon*, T. J. Klopfenstein, C. T. Milton, R. J. Cooper, T. L. Scott, G. E. Erickson, and R. T. Clark, University of Nebraska.
3:00	95	Effect of group size on pig performance in a wean-to-finish production system. B. F. Wolter* <sup>1</sup> , M. Ellis <sup>1</sup> , S. E. Curtis <sup>1</sup> , N. R. Augspurger <sup>1</sup> , D. N. Hamilton <sup>1</sup> , E. N. Parr <sup>2</sup> , and D.M. Webel <sup>2</sup> , <sup>1</sup> University of Illinois, Urbana-Champaign, <sup>2</sup> United Feeds, Inc. Sheridan, IN.
3:15		BREAK
3:30	96	The effect of an anabolic implant on allometric growth of steer calves. K. W. Bruns*, R. H. Pritchard, and B. J. Johnson, South Dakota State University.
3:45	97	Effect of Tryptophan regimen on viremic state and growth of viral challenged pigs. C. P. Machado*, T. S. Stahly, and K. J. Yoon, Iowa State University, Ames.

- 4:00 98 Effect of exogenous infusion of LH on development of ovarian follicular cysts (cysts) in lactating dairy cattle. J. H. Hampton\*, B. E. Salfen, J. F. Bader, D. H. Keisler, and H. A. Garverick, University of Missouri.
- 4:15 99 Effect of pregnancy and nutrient restriction on visceral mass and cellularity. A. N. Scheaffer\*, D. R. Arnold, D. J. Smith, M. L. Bauer, L. P. Reynolds, and J. S. Caton, North Dakota State University, Fargo.

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

### Symposium: Beta-agonists in Food Animals

Chair: Steve Lonergan, Iowa State University, Ames

Tuesday 1:00 p.m. - 4:00 p.m.

Room: 204C

Time	Abstract Number	Paper
1:00	107	INVITED Ractopamine, beta-agonists and muscle research: where do we go from here? D. H. Beermann*, University of Nebraska, Lincoln.
1:30	108	INVITED Beta-Adrenergic Receptor Modulation of Adipocyte Metabolism and Growth. H. J. Mersmann*, USDA/ARS Children's Nutrition Research Center, Department of Pediatrics, Baylor College of Medicine.
2:00	109	INVITED Implications of Feedback Regulation of Beta-Adrenergic Signaling. S.E. Mills*, Purdue University, West Lafayette, IN.
2:30	110	INVITED Potential issues in meat quality of animals fed $\beta$ -Adrenergic Agonists: A Review. M. Koohmaraie*, S. D. Shackelford, and T. L. Wheeler, USDA-ARS, U.S. Meat Animal Research Center, Clay Center, NE.
3:00	111	The effect of Paylean® on the growth performance of finishing swine fed under commercial conditions, summary of five trials. W. C. Weldon*, G. A. Armbruster, T. A. Marsteller, L. E. Watkins, R. D. Muller, and J. R. Wagner, Elanco Animal Health, Greenfield, IN.
3:15	112	Development of models to describe the weekly response of ractopamine. A. P. Schinckel*, M. E. Einstein, C. T. Herr, Y. Wang, K. A. Bowers, S. L. Hankins, T. E. Weber, and B. T. Richert, Purdue University.
3:30		Discussion

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

### Posters

#### Meat Quality

Tuesday 8:00 a.m. - 5:00 p.m.  
 Authors present 3:00 p.m. - 5:00 p.m.  
 Room: Exhibit Hall, Room 206

Abstract Number	Paper
113	The intermediate filament protein desmin is ADP-ribosylated in skeletal muscle cells. W. Tong* <sup>1</sup> , D. Burke <sup>2</sup> , R. Robson <sup>1</sup> , and T. Huiatt <sup>1</sup> , <sup>1</sup> Iowa State University, <sup>2</sup> Indiana University.
114	Use of the yeast two-hybrid system to elucidate the multiple protein interaction domains within the muscle cell intermediate filament protein synemin. R. Bellin*, T. Huiatt, and R. Robson, Iowa State University.
115	Differences in serum leptin concentrations across swine genetic lines. K.R. Maddock* <sup>1</sup> , D.H. Keisler <sup>1</sup> , R.N. Goodwin <sup>2</sup> , T.J. Baas <sup>3</sup> , D.W. Newcom <sup>3</sup> , and E.P. Berg <sup>1</sup> , <sup>1</sup> University of Missouri-Columbia, <sup>2</sup> National Pork Producers Council, Des Moines, IA, <sup>3</sup> Iowa State University-Ames.

- 116 Interrelationships among carcass characteristics of feedlot steers and heifers selected for competition. D. A. King\*, T. E. Lawrence, M. E. Dikeman, and D. E. Schafer, Kansas State University.
- 117 Temperature variation of cooking methods used for research. T. E. Lawrence\*, D. A. King, and M. E. Dikeman, Kansas State University.
- 118 Relationships among selected beef carcass characteristics. T. Lawrence\*<sup>1</sup>, D. King<sup>1</sup>, T. Montgomery<sup>2</sup>, and M. Dikeman<sup>1</sup>, <sup>1</sup>Kansas State University, <sup>2</sup>West Texas A&M University.
- 119 Phenotypic relationships among intramuscular fat, serum testosterone, and scrotal circumference in yearling bulls. D. W. Moser\*, T. T. Marston, J. D. Breinig, L. E. Wankel, and J. F. Gleghorn, Kansas State University, Manhattan.
- 120 The effects of feeding elevated levels of vitamins D<sub>3</sub> and E on beef longissimus tenderness. G.K. Rentfrow\*<sup>1,2</sup>, L. Berger<sup>1</sup>, T. Carr<sup>1</sup>, F. McKeith<sup>1</sup>, M.S. Brewer<sup>1</sup>, and E.P. Berg<sup>2</sup>, <sup>1</sup>University of Illinois, <sup>2</sup>University of Missouri.
- 121 Effects of halothane genotype, dietary magnesium, and duration of refrigerated storage on quality characteristics of vacuum-packaged pork loins. J. K. Apple\*, M. R. Stivarius, J. Riemann, L. K. Rakes, and C. V. Maxwell, University of Arkansas, Fayetteville.
- 122 Effect of level, source and time of feeding prior to slaughter of supplementary magnesium on pork quality. D. N. Hamilton\*<sup>1</sup>, A. V. Frampton<sup>1</sup>, M. Ellis<sup>1</sup>, F. K. McKeith<sup>1</sup>, and J. M. Eggert<sup>2</sup>, <sup>1</sup>University of Illinois, Urbana-Champaign, <sup>2</sup>Hubbard Feeds Inc.
- 123 Comparison of Warner-Bratzler shear force values and star-probe compression values in pork loin. S. M. Lonergan\*<sup>1</sup>, K. J. Prusa<sup>1</sup>, C. A. Fedler<sup>1</sup>, J.K. Page<sup>1</sup>, and J. E. Cannon<sup>2</sup>, <sup>1</sup>Iowa State University, <sup>2</sup>DEKALB CHOICE GENETICS.
- 124 Utilization of real time ultrasound to predict intramuscular lipid and marbling in fresh pork loins. S. M. Lonergan\*<sup>1</sup>, J. P. Carlson<sup>2</sup>, and L. H. Tichenor<sup>2</sup>, <sup>1</sup>Iowa State University, <sup>2</sup>Western Illinois University.
- 125 Effect of Paylean (ractopamine hydrochloride) on lean and primal cut yields from the pork carcass. J. R. Wagner\*<sup>1</sup>, D. J. Jones<sup>1</sup>, and D. H. Mowrey<sup>1</sup>, <sup>1</sup>Elanco Animal Health (A Division of Eli Lilly and Company).

## Nonruminant Nutrition VI

### Weanling Pig Nutrition

Chair: Jack Odle, North Carolina State University  
Tim Fakler, Zinpro Corp., Eden Prairie, MN

Tuesday, 1:00 p.m. - 4:30 p.m.  
Room: 204AB

Time	Abstract Number	Paper
1:00	214	Effect of Solutein™ (Sol) on rate and efficiency of body weight gain in weaned pigs. M.M. Ward* and D.R. Cook, Akey, Inc., Lewisburg, OH.
1:15	215	Efficacy of biopeptides and blood plasma with young pigs during the starter period. T.G. Wiseman* <sup>1</sup> , D.C. Mahan <sup>1</sup> , B. Harmon <sup>2</sup> , and N. Trottier <sup>3</sup> , <sup>1</sup> The Ohio State University, <sup>2</sup> Purdue University, <sup>3</sup> Michigan State University.
1:30	216	Comparison of spray-dried blood meal and blood cells in diets for nursery pigs. J.M. DeRouchey*, J.L. Nelssen, M.D. Tokach, R.D. Goodband, S.S. Dritz, J.C. Woodworth, and B.W. James, Kansas State University, Manhattan.
1:45	217	Irradiation reduces the bacteria in animal plasma and improves growth performance of nursery pigs. J.M. DeRouchey*, J.L. Nelssen, M.D. Tokach, R.D. Goodband, S.S. Dritz, B.W. James, and M.J. Webster, Kansas State University, Manhattan.
2:00	218	The effects of pH and irradiation of spray-dried blood meal on nursery pig performance. J.M. DeRouchey*, M.D. Tokach, J.L. Nelssen, R.D. Goodband, S.S. Dritz, J.C. Woodworth, B.W. James, M.J. Webster, and D.E. Real, Kansas State University, Manhattan.
2:15	219	Spray dried eggs as an ingredient in diets for SEW pigs. S.E. Norberg*, J.B. Durst, M.A. Latour, and B.G. Harmon, Purdue University West Lafayette, IN.

2:30		BREAK
2:45	220	Evaluation of triticale and soft red wheat in nursery diets for pigs weaned at three weeks of age. R. O. Myer, University of Florida, Gainesville.
3:00	221	Effect of dietary carbohydrate or soybean oil on postweaning pig performance, serum triglyceride, urea nitrogen, and body composition. S. Ching* and D.C. Mahan, The Ohio State University, Columbus.
3:15	222	Stickwater as a fat source in diets for nursery pigs. C. L. Jones*, J. D. Hancock, C. W. Starkey, and D. J. Lee, Kansas State University, Manhattan.
3:30	223	Effect of site of weaning and dietary DE content on performance of pigs to 56 d of age. C. L. Levesque* <sup>1,2</sup> , J. F. Patience <sup>1</sup> , E. Beltranena <sup>1</sup> , and R. T. Zijlstra <sup>1</sup> , <sup>1</sup> Prairie Swine Centre, Inc., <sup>2</sup> University of Saskatchewan, Saskatoon, Canada.
3:45	224	Effects of dietary L-carnitine on growth performance of nursery pigs. D. E. Real* <sup>1</sup> , M. U. Steidinger <sup>1</sup> , J. L. Nelssen <sup>1</sup> , M. D. Tokach <sup>1</sup> , R. D. Goodband <sup>1</sup> , S. S. Dritz <sup>1</sup> , J. M. DeRouchey <sup>1</sup> , J. C. Woodworth <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.
4:00	225	Effects of dietary L-carnitine on growth performance and apparent nutrient digestibility in weanling pigs. M.J. Rincker* <sup>1</sup> , S.D. Carter <sup>1</sup> , R.W. Fent <sup>1</sup> , B.W. Senne <sup>1</sup> , and K.Q. Owen <sup>2</sup> , <sup>1</sup> Oklahoma State University, Stillwater, <sup>2</sup> Lonza, Inc., Fairlawn, NJ.
4:15	226	Influence of increasing dietary niacin on starter pig performance. D. E. Real* <sup>1</sup> , J. L. Nelssen <sup>1</sup> , M. D. Tokach <sup>1</sup> , R. D. Goodband <sup>1</sup> , S. S. Dritz <sup>1</sup> , J. M. DeRouchey <sup>1</sup> , B. W. James <sup>1</sup> , M. J. Webster <sup>1</sup> , and E. Alonso <sup>2</sup> , <sup>1</sup> Kansas State University, Manhattan, <sup>2</sup> Lonza, Inc., Fair Lawn, NJ.

## **Nonruminant Nutrition VII**

### **Soybean Meal, Specialty Grains, and Enzymes**

Chair: Dan Jones, DuPont Specialty Grains, Johnston, IA

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

Room: 204FG

Time	Abstract Number	Paper
1:00	227	Variation in the ileal digestible amino acid content of soybean meal as affected by location of production. T.A.T.G. van Kempen* <sup>1</sup> , I.B. Kim <sup>1</sup> , A. Jansman <sup>2</sup> , M.W.A. Verstegen <sup>2</sup> , J.D. Hancock <sup>3</sup> , D.J. Lee <sup>3</sup> , V.M. Gabert <sup>4</sup> , D.M. Albin <sup>4</sup> , and D. Mahan <sup>5</sup> , <sup>1</sup> North Carolina State University, <sup>2</sup> Agricultural University Wageningen, <sup>3</sup> Kansas State University, <sup>4</sup> University of Illinois, <sup>5</sup> Ohio State University.
1:15	228	Effects of soybean meal particle size on amino acid and energy ileal digestibilities in grower-finisher swine. N.D. Fastinger* and D.C. Mahan, The Ohio State University, Columbus.
1:30	229	The influence of soy oligosaccharides on apparent and true ileal amino acid digestibilities and fecal consistency in growing pigs. M. R. Smiricky*, D. M. Albin, J. E. Wubben, V. M. Gabert, C. M. Grieshop, and G. C. Fahey, Jr., University of Illinois, Urbana.
1:45	230	Characterizing the feeding value of extruded-expelled soybean meal (Express <sup>TM</sup> ) with or without added fat in a commercial swine production facility. M. J. Webster* <sup>1</sup> , S. S. Dritz <sup>1</sup> , R. D. Goodband <sup>1</sup> , M. D. Tokach <sup>1</sup> , J. L. Nelssen <sup>1</sup> , J. C. Woodworth <sup>1</sup> , M. De La Latta <sup>1</sup> , and N. W. Said <sup>2</sup> , <sup>1</sup> Kansas State University, <sup>2</sup> Insta-Pro International.
2:00	231	Comparison of extruded/expelled soybean meal with conventionally processed soybean meal in swine diets from weaning to market weight. A. M. Tucker*, P. S. Miller, A. J. Lewis, and R. L. Fischer, University of Nebraska, Lincoln.
2:15	232	Supplementation of $\alpha$ -1,6-galactosidase and $\beta$ -1,4-mannanase to improve soybean meal utilization by growing-finishing pigs. S. W. Kim*, Z. H. Zhang, K. T. Soltwedel, and R. A. Easter, University of Illinois, Urbana.
2:30		BREAK

2:45	233	Inclusion of Coastal Bermuda grass (BG) in feed negatively affects energy digestibility but not feed efficiency in swine. I.B. Kim <sup>*1</sup> , B. Hansen <sup>2</sup> , J. Hansen <sup>3</sup> , R. Dvorak <sup>4</sup> , E. van Heugten <sup>1</sup> , and T. van Kempen <sup>1</sup> , <sup>1</sup> North Carolina State University, <sup>2</sup> Browns of Carolina, <sup>3</sup> Murphy Family Farms, <sup>4</sup> Alltech Inc.
3:00	234	Energy and nitrogen balance of pigs fed commercial red sorghum, identity-preserved white sorghum, or corn. R.W. Fent <sup>*</sup> , S.D. Carter, M.J. Rincker, and B.W. Senne, Oklahoma State University, Stillwater.
3:15	235	Digestibility of energy and amino acids in high-oil corn for grower pigs. R.T. Zijlstra <sup>*1</sup> , T.E. Sauber <sup>2</sup> , and J.F. Patience <sup>1</sup> , <sup>1</sup> Prairie Swine Centre Inc., Saskatoon, Canada, <sup>2</sup> DuPont Specialty Grains, Johnston, IA.
3:30	236	Digestible and metabolizable energy values of nutritionally-enhanced corn hybrids for growing pigs. C.M. Peter <sup>*</sup> , T.M. Parr, and D.H. Baker, University of Illinois, Urbana-Champaign.
3:45	237	Efficacy of high oil corn in reducing the severity of a PRRSV challenge in growing pigs. B.T. Christopherson <sup>*</sup> , R.C. Thaler, C.C. Chase, H.H. Stein, S.H. Pohl, R.A. Bohlke, and B.D. Rops, South Dakota State University, Brookings.

## Physiology III

### Symposium: Some Possible Ways to Increase Litter Size in Swine

Chair: Jeffrey L. Vallet, USDA-ARS, Meat Animal Research Center, Clay Center, NE

Tuesday, 1:00 p.m.- 5:00 p.m.  
Room: 136

Time	Abstract Number	Paper
1:00		An overview of factors limiting litter size. Billy N. Day, University of Missouri, Columbia.
1:20	262	INVITED Control of ovulation rate in swine. H. Cardenas <sup>*</sup> and W.F. Pope, The Ohio State University.
1:55	263	INVITED Increasing fertilization rate: the male perspective. W.L. Flowers <sup>*</sup> , North Carolina State University.
2:30		BREAK
2:50	264	INVITED Early embryonic mortality in the pig. R.D. Geisert <sup>*1</sup> and R.A.M. Schmitt <sup>2</sup> , <sup>1</sup> Oklahoma State University, Stillwater, <sup>2</sup> Seaboard Farm, Inc., Guymon, OK.
3:25	265	INVITED Evidence suggests that uterine capacity is a result of both uterine environmental and conceptus genotype effects. S.P. Ford <sup>*</sup> , Iowa State University.
4:00	266	INVITED Preweaning survival in swine. R.L. Matteri <sup>1</sup> , D.C. Lay <sup>*2</sup> , J.A. Carroll <sup>1</sup> , T.J. Safranski <sup>3</sup> , and T.J. Fangman <sup>3</sup> , <sup>1</sup> Animal Physiology Research Unit, USDA-ARS, Columbia, MO, <sup>2</sup> Livestock Behavior Research Unit, USDA-ARS, West Lafayette, IN, <sup>3</sup> University of Missouri, Columbia, MO.
4:35		Discussion. Ronald K. Christenson, USDA-ARS, Meat Animal Research Center, Clay Center, NE

# **Ruminant Nutrition and Forages III**

## **Symposium: Soy in Ruminant Nutrition**

Chair: Lyle W. Lomas, Kansas State University, Parsons

Tuesday, 1:00 p.m. - 3:00 p.m.  
Room: 138

<b>Time</b>	<b>Abstract Number</b>	<b>Paper</b>
1:00	326	INVITED Soy products as protein sources for beef and dairy cattle. J. L. Firkins* and F. L. Fluharty, The Ohio State University.
1:40	327	INVITED Utilization of whole soybeans in dairy cattle diets. R. Grummer* and E. Rabelo, University of Wisconsin, Madison.
2:20	328	INVITED Soy by-products as energy sources for beef and dairy cattle. E. C. Titgemeyer*, Kansas State University, Manhattan.

# **Ruminant Nutrition and Forages IV**

## **Stocker Cattle Nutrition**

Chair: Lyle W. Lomas, Kansas State University, Parsons

Tuesday, 3:15 p.m. - 4:45 p.m.  
Room: 138

<b>Time</b>	<b>Abstract Number</b>	<b>Paper</b>
3:15	329	Neutral detergent fiber concentration of corn silage and rumen inert bulk influences dry matter intake and ruminal digesta kinetics of growing steers. K. E. Tjardes*, D. D. Buskirk, M. S. Allen, and N. K. Ames, Michigan State University, East Lansing.
3:30	330	Management strategies and live weight gain of steers grazing Old World bluestem. P.D. Kircher* <sup>1</sup> , H.T. Purvis II <sup>1</sup> , G.W. Horn <sup>1</sup> , C.J. Ackerman <sup>2</sup> , T.N. Bodine <sup>1</sup> , and D.A. Cox <sup>1</sup> , <sup>1</sup> Oklahoma Agriculture Experiment Station, Stillwater, <sup>2</sup> Oregon State University, Corvallis.
3:45	331	Effect of winter gain on summer forage intake, summer gain, and finishing performance. D. J. Jordon*, T. J. Klopfenstein, D. C. Adams, C. T. Milton, R. J. Cooper, D. Downs, and G. E. Erickson, University of Nebraska.
4:00	332	Effects of implant status during winter and summer grazing periods on performance of stocker steers. T. N. Bodine*, H. T. Purvis II, D. A. Cox, G. W. Horn, and C. R. Krehbiel, Oklahoma Agricultural Experiment Station, Stillwater.
4:15	333	Effects of implant status during winter grazing and rate of gain during summer grazing on performance by stocker steers. T. N. Bodine*, H. T. Purvis, D. A. Cox, G. W. Horn, and C. R. Krehbiel, Oklahoma Agricultural Experiment Station, Stillwater.
4:30	334	Undegradable intake protein supplementation of March- and June-born steers previously wintered at two rates of gain. A. M. Hopkin*, D. C. Adams, T. J. Klopfenstein, and R. T. Clark, University of Nebraska, Lincoln.

# Ruminant Nutrition and Forages V

## Cow-Calf/Dairy Nutrition

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

Tuesday, 3:15 p.m. - 5:00 p.m.  
Room: 205D

Time	Abstract Number	Paper
3:15	335	Excess crude protein and creep feeding affects growth and subsequent maternal characteristics of beef heifers. W. J. Sexten*, D. B. Faulkner, J. M. Dahlquist, and F. A. Ireland, University of Illinois, Urbana.
3:30	336	Supplementation of lactating two-year-old cows consuming meadow hay to meet metabolizable protein requirements versus degradable intake protein requirements. H. H. Patterson*, A. M. Hopkin, D. C. Adams, and T. J. Klopfenstein, University of Nebraska, Lincoln.
3:45	337	Increasing dietary protein to metabolizable energy ratios on feed efficiency, structural growth, and body condition score of prepubertal Holstein heifers. M.T. Gabler* and A.J. Heinrichs, Pennsylvania State University.
4:00	338	Difference in response of Holstein and Brown Swiss cows to diets containing fish oil, extruded soybeans, or their combination. L. A. Whitlock*, D. J. Schingoethe, A. R. Hippen, R. J. Baer, N. Ramaswamy, and K. M. Kasperson, MN-SD Dairy Foods Research Center, South Dakota State University, Brookings.
4:15	339	Effect of BMR corn silage on lactation performance of primiparous and multiparous lactating dairy cows. T. D. Nennich* <sup>1</sup> , J. G. Linn <sup>1</sup> , and H. G. Jung <sup>1,2</sup> , <sup>1</sup> University of Minnesota, St. Paul, <sup>2</sup> USDA-ARS, St. Paul.
4:30	340	Supplementing whole soybeans prepartum increases first service conception rate in postpartum suckled beef cows. K. K. Graham* <sup>1</sup> , J. F. Bader <sup>1</sup> , D. J. Patterson <sup>1</sup> , M. S. Kerley <sup>1</sup> , and C. N. Zumbrennen <sup>2</sup> , <sup>1</sup> University of Missouri, Columbia, <sup>2</sup> Sullivan County Outreach and Extension Center, Milan, MO.
4:45	341	Effects of restricting time of access to large round bales of hay on feed waste and cow performance. A.J. Miller*, D.B. Faulkner, T.C. Cunningham, and J.M. Dahlquist, University of Illinois.

## Breeding and Genetics IV

### Beef Cattle Breeding

Chair: Kent Weigel, University of Wisconsin, Madison

Wednesday, 9:30 a.m. - 11:45 a.m.  
Room: 205D

Time	Abstract Number	Paper
9:30	42	A comprehensive search for quantitative trait loci affecting growth and carcass composition of cattle segregating alternative forms of the myostatin gene. E. Casas* <sup>1</sup> , R. T. Stone <sup>1</sup> , J. W. Keele <sup>1</sup> , S. D. Shackelford <sup>1</sup> , S. M. Kappes <sup>2</sup> , and M. Koohmaraie <sup>1</sup> , <sup>1</sup> USDA-ARS, U.S. Meat Animal Research Center, Clay Center, NE, <sup>2</sup> USDA-ARS, National Program Staff, Beltsville, MD.
9:45	43	Associations of Leptin Gene Marker with Carcass Traits in Cattle. C. D. Bierman* and D. M. Marshall, South Dakota State University, Brookings.

- 10:00 44 Heritability and correlation estimates of carcass data from Angus-sired steers. J.A. Minick\*<sup>1</sup>, D.E. Wilson<sup>1</sup>, M.E. Dikeman<sup>2</sup>, and E.J. Pollak<sup>3</sup>, <sup>1</sup>Iowa State University, Ames, <sup>2</sup>Kansas State University, Manhattan, <sup>3</sup>Cornell University, Ithaca, New York.
- 10:15 45 Heterogeneity of variance and estimation of genetic parameters. L. D. Van Vleck\*<sup>1,3</sup>, R. K. Splan<sup>2</sup>, and L. V. Cundiff<sup>1,4</sup>, <sup>1</sup>USDA-ARS USMARC, <sup>2</sup>Virginia Tech, Blacksburg, VA, <sup>3</sup>Lincoln, NE, <sup>4</sup>Clay Center, NE.
- 10:30 BREAK
- 10:45 46 Genetic parameters for scrotal circumference and age at puberty in beef cattle. G. Martinez-Velazquez\*<sup>1</sup>, K. E. Gregory<sup>2</sup>, G. L. Bennett<sup>2</sup>, and L. D. Van Vleck<sup>2,3</sup>, <sup>1</sup>University of Nebraska, Lincoln, <sup>2</sup>USDA, ARS, USMARC, <sup>2</sup>Clay Center, NE, <sup>3</sup>Lincoln, NE.
- 11:00 47 Genetic parameters for reproductive traits in beef cattle. G. Martinez-Velazquez\*<sup>1</sup>, K. E. Gregory<sup>2</sup>, G. L. Bennett<sup>2</sup>, and L. D. Van Vleck<sup>2,3</sup>, <sup>1</sup>University of Nebraska, Lincoln, <sup>2</sup>USDA, ARS, USMARC, <sup>2</sup>Clay Center, NE, <sup>3</sup>Lincoln, NE.
- 11:15 48 Comparison of models for estimating direct and maternal genetic effects for weaning weight of Hereford cattle. P. Sopannarath\*<sup>1</sup>, J. K. Bertrand<sup>2</sup>, L. D. Van Vleck<sup>3</sup>, and S. Tumwasorn<sup>4</sup>, <sup>1</sup>University of Nebraska, Lincoln, <sup>2</sup>University of Georgia, Athens, <sup>3</sup>USDA, ARS, USMARC, Lincoln, NE, <sup>4</sup>Kasetsart University, Bangkok, Thailand.
- 11:30 49 Birth and weaning traits of topcross progeny of Hereford, Angus, Red Angus, Simmental, Gelbvieh, Limousin, and Charolais sires. L. V. Cundiff\*, Roman L. Hruska U.S. Meat Animal Research Center, Clay Center, NE.

## **Companion Animal Biology**

### **Symposium: Companion Animal Biology as a Focal Point in the Animal Sciences**

Sponsored by: DuCoa, Hill's Pet Nutrition, Inc., Nestle (Friskies), and The Iams Co.

Chair: George C. Fahey, Jr., University of Illinois, Urbana

Wednesday, 9:00 a.m. - Noon

Room: 204AB

- 9:00 Symposium background and introduction. George C. Fahey, Jr., University of Illinois, Urbana-Champaign.
- 9:15 Issues surrounding the teaching of companion animal biology in an animal science department. Linda Case and Neal Merchen, University of Illinois, Urbana-Champaign.
- 9:55 Research in companion animal biology: topics of importance, current controversies, and opportunities. John Bauer, Texas A&M University, College Station, and Karen Wedekind, Hills Pet Nutrition, Inc., Topeka, KS
- 10:35 Outreach efforts in companion animal science: issues, controversies, and opportunities. Stephen Zawistowski, The American Society for the Prevention of Cruelty to Animals, New York
- 11:05 Role of animal science departments and FASS in fostering companion animal programs. Maynard Hogberg, Michigan State University, East Lansing, and Ellen Bergfeld, Executive Director, ASAS
- 11:45 General Question/Answer Session

## Extension V

### Posters

Wednesday, 9:00 a.m. - Noon  
Authors present 9:00 a.m. - 11:00 a.m.  
Room: Exhibit Hall, Room 206

Abstract Number	Paper
71	Effects of milk replacer feeding rate and concentration on performance and economics in Holstein heifer calves. D. R. Catherman* <sup>1</sup> , <sup>1</sup> Strauss Feeds, Watertown, WI.
72	University of Missouri Southwest Research Center Pasture-Based Seasonal Dairy. S.A. Hamilton* <sup>1</sup> , T.R. Rickard, R.A. Crawford, R.D. Young, B.J. Steevens, and C.W. Davis, <sup>1</sup> University of Missouri.
73	Survey of dietary phosphorus levels in TMR-fed dairy herds. S.L. Gunderson*, J.L. Keuning, and K.A. Erb, University of Wisconsin-Extension.
74	Illinois Lean Growth Project. Utilizing on-farm field research to develop prescription swine feeding and management regimes. D.J. Jennings* <sup>1</sup> , G. Hollis <sup>1</sup> , D. Oswald <sup>1</sup> , E. Ballard <sup>1</sup> , R.K. Knipe <sup>1</sup> , D. Seibert <sup>1</sup> , A.P. Schinckel <sup>2</sup> , and M.D. Tokach <sup>3</sup> , <sup>1</sup> University of Illinois, Urbana, <sup>2</sup> Purdue University, West Lafayette, Indiana, <sup>3</sup> Kansas State University, Manhattan.
75	The effects of housing system and physical environment on post-weaning pig performance. M. E. Larson* and M. S. Honeyman, Iowa State University.
76	A two year summary of finishing-pigs' performance in hoop structures and confinement during winter and summer in Iowa. M. S. Honeyman*, J. D. Harmon, M. E. Larson, and A. D. Penner, Iowa State University.

## Extension VI

### Symposium: Practical Regulation of Dairy Heifer Growth

Sponsored by: APC Company, Inc., Ames, IA, Land O'Lakes Animal Milk Products, Minneapolis, MN and Milk Specialties, Dundee, IL

Chair: Dr. Jim Quigley, APC Company, Inc., Ames, IA

Wednesday, 9:00 a.m. - Noon  
Room: 134

Time	Abstract Number	Paper
9:00		Introduction Jim Quigley, APC Company, Inc., Ames, IA.
9:10	77	INVITED Composition and regulation of targeted growth of the neonate: implications for feeding systems and postweaning management. M.E. Van Amburgh*, J.M. Smith, and J.N. Tikofsky, Cornell University.
9:55	78	INVITED Practical heifer rearing for lifetime production. C. Park*, North Dakota State University.
10:40	79	INVITED Regulating heifer growth by nutrition and management for economical dairy replacement systems. A. J. Heinrichs*, Pennsylvania State University.
11:30		Open Discussion

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

## Meat Quality

Chair: Floyd McKeith, University of Illinois, Urbana

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

Room: 204C

Time	Abstract Number	Paper
9:00	126	Factors affecting beef color development (bloom) over time. K.S. Kirchofer, C.R. Calkins*, K.M. Eskridge, and D.J. Hanson, University of NE, Lincoln.
9:15	127	Dietary fat source alters beef carcass tocopherol and fatty acid profiles. E. E. D. Felton* <sup>1</sup> , C. L. Lorenzen <sup>1</sup> , C. A. Stahl <sup>1</sup> , M. S. Kerley <sup>1</sup> , S. D. Soderlund <sup>2</sup> , and F. N. Owens <sup>2</sup> , <sup>1</sup> University of Missouri, Columbia, <sup>2</sup> DuPont Specialty Grains, Des Moines, IA.
9:30	128	Dietary conjugated linoleic acid conserves color, decreases lipid oxidation, and changes fatty acid profile of irradiated beef patties. B. R. Wiegand* <sup>1</sup> , F. C. Parrish, Jr. <sup>2</sup> , J. E. Swan <sup>3</sup> , S. T. Larsen <sup>2</sup> , A. H. Trenkle <sup>2</sup> , and K. Gassman <sup>2</sup> , <sup>1</sup> Illinois State University, Normal, <sup>2</sup> Iowa State University, Ames, <sup>3</sup> Elanco Animal Health, Greenfield, IN.
9:45	129	Comparison of ultrasound and carcass measures to predict lean beef from four primal cuts. R. G. Tait, Jr* <sup>1</sup> , G. H. Rouse, D. E. Wilson, and C. L. Hays, Iowa State University, Ames.
10:00	130	Evaluation of serially measured live-animal traits in purebred Angus bulls and heifers. A. Hassen* <sup>1</sup> , D. E. Wilson, and G. H. Rouse, Iowa State University, Ames.
10:15	131	Comparisons of three cooking methods used for beef tenderness research. T. E. Lawrence* <sup>1</sup> , D. A. King, E. Obuz, E. J. Yancey, and M. E. Dikeman, Kansas State University.
10:30	132	Increasing the Value of the Beef Chuck by Altering the Rib/Chuck Break Point. B. J. Reuter* <sup>1</sup> , D. M. Wulf, B. C. Shanks, J. M. Bok, and R. J. Maddock, South Dakota State University, Brookings.
10:45	133	Preliminary carcass, yield, and Warner-Bratzler shear force traits of topcross steer progeny of Hereford, Angus, Red Angus, Simmental, Gelbvieh, Limousin, and Charolais sires. T. L. Wheeler* <sup>1</sup> , S. D. Shackelford, L. V. Cundiff, and M. Koohmaraie, USDA, ARS, U.S. Meat Animal Research Center, Clay Center, NE.
11:00	134	Determination of moisture loss from fresh, aged, or frozen pork loin chops. C. R. Taylor* <sup>1</sup> , T. D. Bidner, J. L. Shelton, L. L. Southern, and M. A. Persica, Louisiana State University Agricultural Center, Baton Rouge.
11:15	135	Antibiotic resistance profiles of <i>Campylobacter</i> isolated from swine. R. B. Harvey* <sup>1</sup> , M. E. Hume, R. E. Droleskey, R. C. Anderson, and D. J. Nisbet, USDA, ARS, Food and Feed Safety Research Unit, College Station, TX USA.

# Nonruminant Nutrition VIII

## Symposium: Interactions Among Nutrition, Health, and Disease Resistance

Sponsored by: Danbred U.S.A.

Chair: Phil Miller, University of Nebraska, Lincoln

Wednesday, 9:00 a.m. - Noon

Room: 204FG

Time	Paper
9:00	Introduction
9:05	Principles of disease resistance – special inferences to swine. Rodney Johnson, University of Illinois, Urbana.
9:35	The pig as a model to assess the role of nutrition in human health and disease. Doug Burrin, Children’s Nutrition Research Center, Baylor College of Medicine.
10:05	Break
10:15	Nutrition, disease, and longevity - companion animal perspective. Bill Schoenherr, Hill’s Pet Nutrition, Topeka, KS.
10:45	Nutrition - health interactions in swine production: research findings and issues facing the swine industry, Tim Stahly, Iowa State University.
11:30	Discussion

## Physiology IV

### Posters

Wednesday morning 9:00 a.m. - Noon

Authors present 9:00 a.m. - 11:00 a.m.

Room: Exhibit Hall, Room 206

Abstract Number	Paper
267	Use of a vaginal mucus electrical resistance probe to alter insemination time and calf gender distribution in beef heifers. M.L. Pugh, M. Pence, J.N. Caamano, S. Robbe, L.L. Timms, J.U. Thomson, and C.R. Youngs*, Iowa State University, Ames.
268	Field evaluation of extended pirlimycin therapy with or without vaccination for Staphylococcus aureus mastitis in a dairy herd. L. Timms* <sup>1</sup> , M. Kirkpatrick <sup>1</sup> , and P. Sears <sup>2</sup> , <sup>1</sup> Iowa State University, Ames, <sup>2</sup> Michigan State University.
269	<b>Innovation in Dairy Research Award</b> – Field trial evaluation of a persistent barrier teat dip for preventing dry period mastitis and as a potential alternative/adjunct to dry cow antibiotic therapy. L.L. Timms*, Iowa State University.
270	An investigation of the impact of milk production and important management factors on the process of drying off lactating dairy cows. R.T. Dingwell* <sup>1</sup> , K.E. Leslie <sup>1</sup> , Y.H. Schukken <sup>2</sup> , David Kelton <sup>1</sup> , Jan Sargeant <sup>3</sup> , and Leo Timms <sup>4</sup> , <sup>1</sup> University of Guelph, <sup>2</sup> Cornell University, <sup>3</sup> Kansas State University, <sup>4</sup> Iowa State University.
271	Leptin as a metabolic signal in sows. C.D. Morrison*, J.S. Seaman, D.H. Keisler, and T.J. Safranski, University of Missouri - Columbia.
272	The effects of prepartum and preweaning vaccination of beef cows and calves with a commercially available pasteurella haemolytica vaccine. L.E. Wankel*, T.T. Marston, G.L. Stokka, T.G. Rozell, and J.R. Brethour, Kansas State University, Manhattan.
273	Temporal feeding of melengesterol acetate (MGA) to elicit an estrous response in early postpartum beef cows. J.F. Gleghorn*, T.T. Marston, and L.E. Wankel, Kansas State University, Manhattan.

- 274 The effect of limited melengestrol acetate (MGA) feeding on pregnancy rate and postpartum interval in fall and spring calving beef cows. J.F. Gleghorn\*, T.T. Marston, and L.E. Wankel, Kansas State University, Manhattan.
- 275 Fetal mortality as influenced by ovulation rate and uterine capacity in three selected lines of pigs. R. K. Christenson\* and K. A. Leymaster, USDA, Agricultural Research Service, U.S. Meat Animal Research Center.
- 276 Development of a bovine  $\beta$ -actin probe for ribonuclease protection assays. S.H. Wu\*, M.P. Murtaugh, D.N. Foster, and B.A. Crooker, University of Minnesota.
- 277 Characterization of serum hormone profiles of growing heifers implanted with estrogenic or androgenic implants. D. A. Blasi\*<sup>1</sup>, D. M. Hendricks<sup>2</sup>, G. L. Kuhl<sup>1</sup>, J. S. Drouillard<sup>1</sup>, M. F. Spire<sup>1</sup>, and J. E. Minton<sup>1</sup>, <sup>1</sup>Kansas State University, <sup>2</sup>Clemson University.
- 278 Ultrasonographic evidence of luteal-like tissue for determination of treatment in dairy cows with follicular cysts. C.J. Johnson\*, G.S. Frazer, T.E. Wittum, P.J. Rajala-Schultz, R.W. Meiring, D.W. Shaw, and J.S. Ottobre, The Ohio State University.
- 279 Reproductive efficiency of dairy cows is associated negatively with concentrations of liver lipids in the postpartal period. G. Bobe\*<sup>1</sup>, B. N. Ametaj<sup>1</sup>, D. C. Beitz<sup>1</sup>, and J. W. Young<sup>1</sup>, <sup>1</sup>Iowa State University, Ames, IA.

## Ruminant Nutrition and Forages VI

Chair: Jeffrey L. Firkins, The Ohio State University, Columbus

Wednesday, 9:00 a.m. - 10:30 a.m.

Room: 136

Time	Abstract Number	Paper
9:00	342	Relationship between aging and nutritional controlled growth rate on heat production of ewe lambs. H. C. Freetly*, J. A. Nienaber, and T. M. Brown-Brandl, USDA, ARS, U.S. Meat Animal Research Center, Clay Center, NE.
9:15	343	Effects of rumen undegradable protein digestibility and supplemental methionine on production parameters of holstein cows in early lactation. S. Noftsger* and N. St-Pierre, The Ohio State University.
9:30	344	Leucine and valine, but not isoleucine, are limiting in soybean hull-based diets for growing cattle. C. A. Loest*, E. C. Titgemeyer, B. D. Lambert, and A. M. Trater, Kansas State University, Manhattan.
9:45	345	Impact of glycine supply on utilization of methionine and cysteine by cattle. B. D. Lambert*, E. C. Titgemeyer, and C. A. Loest, Kansas State University, Manhattan.
10:00	346	Effects of bloodmeal and arginine-HCl on serum hormone, plasma amino acid, and nitrogen retention in growing steers. J. W. Lehmkuhler*, C.D. Morrison, A. Moore, D.H. Keisler, and M. S. Kerley, University of Missouri, Columbia.
10:15	347	Effects of forage type and concentrated separator by-product (CSB) on intake and digestion in beef steers. J. E. Leonard*, M. L. Bauer, G. P. Lardy, V. I. Burke, T. C. Gilbery, and J. S. Caton, North Dakota State University, Fargo.

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# SCHEDULE OF EVENTS

## Monday, March 19

- 9:00 a.m. Special Livestock Symposium: Contemporary Issues Facing US Livestock Industries See Page 12
- 1:00 p.m. Teaching See Page 18
- 1:00 p.m. Nonruminant Nutrition I See Page 13
- 1:00 p.m. Nonruminant Nutrition III Poster Session (Authors Present 2:00 p.m. - 4:00 p.m.) See Page 15
- 2:00 p.m. Nonruminant Nutrition II See Page 14
- 3:30 p.m. Undergraduate Student Competitive Research Papers See Page 19
- 6:00 p.m. Reception Courtesy of Kemin Industries, Inc., Des Moines, IA, Room 134 Convention Center
- 8:00 p.m. Academic Quadrathlon, Quiz Bowl Competition, Room 144 Convention Center  
Results of the Academic Quadrathlon will be announced following the Quiz Bowl Competition

## Tuesday, March 20

- 6:45 a.m. Extension Breakfast, Grand A, Savery  
Hotel See Page 23
- 6:45 a.m. Program Chairs Breakfast, Room 210, Savery Hotel
- 8:00 a.m. Symposium: Livestock Cognition: Implications On Production and Well-Being, Animal Behavior and Well-Being I See Page 20
- 8:00 a.m. Breeding and Genetics III Poster Session (Authors Present 1:00 p.m. – 3:00 p.m.) See Page 42
- 8:00 a.m. Extension I See Page 23
- 8:00 a.m. Graduate Student Competitive Research Papers M.S. Division See Page 25
- 8:00 a.m. Growth, Development, Muscle Biology, and Meat Science III (Authors Present 3:00 p.m. – 5:00 p.m.)  
Poster Session  
See Page 47
- 8:00 a.m. Nonruminant Nutrition IV See Page 27
- 8:00 a.m. Nonruminant Nutrition V See Page 29
- 8:00 a.m. Physiology I See Page 32
- 8:00 a.m. Ruminant Nutrition and Forages I Poster Session (Authors Present even boards 8:00 a.m. – 10:00 a.m.,  
odd boards 10:00 - Noon) See Page 35
- 8:00 a.m. Ruminant Nutrition and Forages II See Page 38

- 8:30 a.m. Breeding and Genetics I See Page 22
- 9:00 a.m. Refreshments Courtesy of DuPont Specialty Grains
- 9:30 a.m. Growth, Development, Muscle Biology, and Meat Science I See Page 26
- 9:45 a.m. Odor and Nutrient Management I  
See Page 31
- 10:00 a.m. Extension II See Page 24
- 10:15 a.m. Animal Behavior and Well-Being II See Page 21
- 10:30 a.m. Physiology II See Page 34
- 11:30 a.m. Lunch 11:30 a.m. – 1:30 p.m., Exhibit Hall, Room 206 Convention Center  
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 will 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 a lunch in advance. The box lunches available for sale will be on first-come basis.
- 1:00 p.m. Animal Behavior, Housing, and Well-Being III See Page 40
- 1:00 p.m. Breeding and Genetics II See Page 41
- 1:00 p.m. Extension III See Page 43
- 1:00 p.m. Symposium: Beta-Agonists in Food Animals, Growth, Development, Muscle Biology, and Meat Science II See Page 46
- 1:00 p.m. Nonruminant Nutrition VI See Page 48
- 1:00 p.m. Nonruminant Nutrition VII See Page 50
- 1:00 p.m. Symposium: Some Possible Ways To Increase Litter Size In Swine, Physiology III See Page 51
- 1:00 p.m. Symposium: Soy in Ruminant Nutrition, Ruminant Nutrition and Forages III See Page 52
- 2:00 p.m. Refreshments Courtesy of DuPont Specialty Grains
- 2:30 p.m. Symposium: Weaning Management Systems for Improving Beef Quality, Extension IV See Page 44
- 2:30 p.m. Graduate Student Competitive Research Papers Ph.D. Division See Page 45
- 3:15 p.m. Ruminant Nutrition and Forages IV See Page 53
- 3:15 p.m. Ruminant Nutrition and Forages V See Page 54
- 5:00 p.m. Reception Courtesy of IMC, Exhibit Hall, Room 206, Convention Center

## Wednesday, March 21

- 6:45 a.m. ASAS/ADSA Breakfast, Awards Program and Business Meeting, Courtesy of Diamond V Mills, Inc., Cargill Animal Nutrition Division, Vetlife, Milk Products, Inc., Room 134, Convention Center
- 9:00 a.m. Refreshments Courtesy of DuPont Specialty Grains
- 9:00 a.m. Symposium: Companion Animal Biology as A Focal Point in the Animal Sciences, Companion Animal Biology See Page 56
- 9:00 a.m. Extension V Poster Session (Authors present 9:00 a.m. – 11:00 a.m.)  
See Page 57
- 9:00 a.m. Symposium: Practical Regulation of Dairy Heifer Growth, Extension VI See Page 58
- 9:00 a.m. Growth, Development, Muscle Biology, and Meat Science IV See Page 59
- 9:00 a.m. Symposium: Interactions Among Nutrition, Health, and Disease Resistance, Nonruminant Nutrition VIII  
See Page 60
- 9:00 a.m. Physiology IV Poster Session (Authors Present 9:00 a.m. – 11:00 a.m.)  
See Page 61
- 9:00 a.m. Ruminant Nutrition and Forages VI See Page 62
- 9:30 a.m. Breeding and Genetics IV See Page 55

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## Room Assignments

ACTIVITY	ROOM
<b>Monday AM</b>	
Special Livestock Symposium	Room 204AB
<b>Monday PM</b>	
Nonruminant Nutrition I	204FG
Nonruminant Nutrition II	204AB
Nonruminant Nutrition III	Exhibit Hall, Room 206
Teaching	205IJ
Undergraduate Student Competitive Research Papers	Rom 204C
Reception	134
Quiz Bowl	144
<b>Tuesday AM</b>	
Extension Breakfast	Savery Hotel, Grand A
Program Chairs Breakfast	Savery Hotel, Room 210
Refreshments	Exhibit Hall, Room 206
Animal Behavior and Well-Being I	205D
Animal Behavior and Well-Being II	205D
Breeding & Genetics I	205E
Extension I	138
Extension II	138
Graduate Student Competitive Research Papers	140
Growth, Development, Muscle Bio & Meat Science I	204C
Nonruminant Nutrition IV	204FG
Nonruminant Nutrition V	204AB
Odor and Nutrient Management I	134
Physiology I	136
Physiology II	136
Ruminant Nutrition & Forages I	Exhibit Hall, Room 206
Ruminant Nutrition & Forages II	205IJ
<b>Tuesday PM</b>	
Refreshments	Exhibit Hall, Room 206
Animal Behavior, Housing, & Well-Being III	205D
Breeding & Genetics II	205E
Breeding & Genetics III	Exhibit Hall, Room 206
Extension III	134
Extension IV	134
Graduate Student Competitive Research Papers	140
Growth, Development, Muscle Biology, and Meat Science II	204C
Growth, Development, Muscle Biology, and Meat Science III	Exhibit Hall, Room 206
Nonruminant Nutrition VI	204AB
Nonruminant Nutrition VII	204FG
Physiology III	136
Ruminant Nutrition & Forages III	138
Ruminant Nutrition & Forages IV	138
Ruminant Nutrition & Forages V	205D
Reception	Exhibit Hall, Room 206
<b>ACTIVITY</b>	<b>ROOM</b>
<b>Wednesday AM</b>	
ADSA/ASAS Breakfast	134
Midwestern Section ADSA &ASAS Business Meeting	134
Breeding & Genetics IV	205D

Companion Animal Biology	204AB
Extension V	Exhibit Hall, Room 206
Extension VI	134
Growth, Development, Muscle Bio & Meat Science IV	204C
Nonruminant Nutrition	204FG
Physiology IV	Exhibit Hall, Room 206
Ruminant Nutrition & Forages VI	136