

VITA

I. NAME OF FACULTY MEMBER **DEPARTMENT AFFILIATIONS**
Jay D. Harmon, Ph.D., P.E. Department of Agricultural and Biosystems Engineering

II. RANK
Professor

III. EDUCATION

Ph.D. Agricultural Engineering	Virginia Polytechnic Institute and State University	December, 1989
M.S. Agricultural Engineering	University of Minnesota	July, 1986
B.S. Agricultural Engineering	Purdue University	May, 1984

IV. PROFESSIONAL EXPERIENCE

Associate Dean, Extension Programs and Outreach, College of Agriculture and Life Sciences, and Director, Agriculture and Natural Resources Extension, Iowa State University, January 2020 to present

Responsible for guiding agricultural and natural resources extension and outreach programming that will impact the citizens of Iowa in the areas of: Food Security and Hunger, Natural Resources & Environmental Stewardship, Sustainable & Renewable Energy, and Health & Well-Being. Programming efforts include approximately 40 agricultural field specialists and 60 faculty with partial extension appointments.

Interim Associate Dean, Extension Programs and Outreach, College of Agriculture and Life Sciences, and Interim Director, Agriculture and Natural Resources Extension, Iowa State University, April 2017 to present

Responsible for guiding agricultural and natural resources extension and outreach programming that will impact the citizens of Iowa in the areas of: Food Security and Hunger, Natural Resources & Environmental Stewardship, Sustainable & Renewable Energy, and Health & Well-Being. Programming efforts include approximately 40 agricultural field specialists and 60 faculty with partial extension appointments.

Professor, Iowa State University, July 2005 to Present

Responsible for developing a technology transfer and research program related to livestock production systems which will benefit the citizens of Iowa, with profound impacts regionally, nationally and internationally. Teaching includes senior design courses. Appointment of 50 percent extension, 25 percent research, and 25 percent teaching. Designated as the professor-in-charge of Midwest Plan Service. Supervises 4 agricultural engineering field specialists and one MWPS employee.

Interim Director, Iowa Pork Industry Center, July 2014 to September 2015

Responsible for the management and educational programming of pork activities for Iowa State University Extension and Outreach. Supervises 6 swine field specialists and 3 center personnel. Represents ISU as a member of the Iowa Pork Board.

Associate Professor, Iowa State University, July 2002 to June 2005

Responsible for developing a technology transfer and research program related to livestock production systems which will benefit the citizens of Iowa, with profound impacts regionally, nationally and internationally. Teaching includes senior design courses. Appointment of 50 percent extension, 25 percent research, and 25 percent teaching.

Associate Professor, Iowa State University, July 1998 to June 2002

Responsible for developing a technology transfer and research program related to livestock production systems which will benefit the citizens of Iowa, with profound impacts regionally, nationally and

internationally. Appointment of 75 percent extension and 25 percent research

Assistant Professor, Iowa State University, December 1993 to June 1998

Responsible for developing a technology transfer and research program related to livestock production systems which will benefit the citizens of Iowa, with profound impacts regionally, nationally and internationally. Appointment of 75 percent extension and 25 percent research

Assistant Professor, Clemson University, October 1989 to November 1993

Responsible for development and leadership of a technology transfer program to deliver livestock production systems information to the citizens of South Carolina. Developed agricultural plans for and managed the Clemson Plan Service. Appointment was 100 percent extension

Graduate Research Assistant, VPI & SU, September 1986 to September 1989

Dissertation: "Simulation of a Swine Nursery to Facilitate Economical Management"

Advisor: Dr. Eldridge R. Collins, Jr.

Responsible for the development and validation of a computer model which predicts thermal and economical performance of a swine nursery. Tested the model during a ventilation failure. Developed a spreadsheet used by Virginia SCS for land spreading of animal manure. Also responsible for grading papers and demonstrating the homework during two quarters in the farm structures course for agriculture students.

Graduate Research Assistant, University of Minnesota, June 1984 to August 1986

Thesis: "Flow Analysis of Baffled, Slotted Eave Inlets, With and Without Attic Effects"

Advisor: Dr. Kevin A. Janni

Responsible for the development and testing of the pressure interactions of a full scale inlet system. Conducted on-farm innovative energy interviews for the Minnesota Turkey Growers Association. Developed computer programs on heat loss and ventilation balances for classroom use. Taught two laboratory sections of a BASIC computer course.

V. ISU PERSONNEL RECORD

Rank	Date	Appointment Base	Appointment (approximate)		
			Extension	Research	Teaching
Associate Dean	1/20	A Base	100%	0%	0%
Interim Associate Dean	4/17	A Base	100%	0%	0%
Professor	7/05	A Base	50%	25%	25%
Associate	7/02	A Base	50%	25%	25%
Associate	7/98	A Base	75%	25%	0%
Assistant	12/93	A Base	75%	25%	0%

VI. PROFESSIONAL ASSOCIATIONS

American Society of Agricultural and Biological Engineers, Member 1980-present

National Nomination committee – 2019-2021

Board of Trustees – 2012-2015

POLC – Professional Organization Liaison Council (national) representative (2012-2016)

PE Task Force – Chair – (2013-2014)

Student video competition development committee – (2012-2014)

Licensing That Works ad-hoc committee – (2012-2016)

PEI – Professional Engineering Institute (2004-present)

ED-414 Engineering Licensure (2004-present)

Vice Chair 2005-7, Chair 2007-2009, Acting Chair 2009-2010, Past Chair 2010-12

ASABE Representative to Examinations for Professional Engineers committee (2009-12)

AE PE Exam Cut Score Committee (2009, 2010)
Professional Engineering Exam Preparation Committee (2003-present)
Ag Engineering PE Exam Task Force (2006-2009)
Professional Engineering Practice Exam Development Committee 2002-2003, 2010, 2014 (chair)
M-155 Gunlogson Countryside Engineering Award Committee, Member 2018-present
Chair, 2019-present
ED-01 Education Group
Secretary 08-09, Vice chair 09-10, chair 10-11
SE-40 Facilities and Systems Group
Chair 1998-99, Vice Chair 1997-98, Secretary 1996-97
SE-08 ASHRAE Liaison (1989-1998)
Chair 1991-92, 97-98, Vice Chair 1990-91, 96-97, Secretary 1989-90, 95-96
SE-404 Swine Housing (1988-present)
SE-405 Poultry Housing (1990-2000)
Chair 1995-96, Vice Chair 1994-95, Secretary 1993-94
SE-413 Animal Welfare and Care (1999-2002)
International Livestock Environment Symposium V Planning Committee (1995-97), Publicity chair
First International Swine Housing Conference Planning Committee (1998-2000), Publicity chair
AE50 Committee 2001-2002

American Society of Heating, Refrigerating and Air-conditioning Engineers, Member (80-03, 11-present)
TC-2.2 Plant and Animal Environment (1990-2003)
Chair 1991-93
Handbook Revision Subcommittee, Chair (1992-94)
730-TRP Project Monitoring Committee (1992-93)
784-TRP Project Monitoring Committee (1993-94), Chair

National Frame Builders Association, member 1992-present

South Carolina Association of County Agricultural Agents (1990-93)
Secretary/Treasurer 1991-92

South Carolina Pork Producers Association (1990-93)

Clemson University Extension Specialist Association (1990-93)

VII. AWARDS, HONORS AND RECOGNITION

- ASABE PEI Professional Engineer of the Year. 2019. ASABE, St. Joseph, MI
- Superior Paper Award. 2018. **Harmon**, Hoff, Baas, Zhao, Xin, Follett. Evaluation of Conditions during Weaned Pig Transport. ASABE, St. Joseph, MI.
- Superior Paper Award. 2017. Y. Zhao, H. Xin, J. **Harmon**, T. Baas. Mortality Rate of Weaned and Feeder Pigs as Affected by Ground Transport Conditions. ASABE, St. Joseph, MI.
- Virginia Tech College of Agriculture and Life Sciences Outstanding Alumni Award. 2017. Blacksburg, VA.
- Regents' Faculty Excellence Award. ISU. 2017.
- Gunlogson Countryside Engineering Award, 2015. ASABE, St. Joseph, MI.
- Engineer of the Year Award. 2015. Iowa Section of ASABE.
- College of Agriculture and Life Sciences Dean's Citation for Extraordinary Contributions to the College. 2015. Iowa State University, Ames, IA.
- Outstanding Achievement in Extension and Outreach Award. 2014. Iowa State University College of Agriculture and Life Sciences.
- Certificate of Appreciation. 2013. NCEES. In recognition for 10 years of exam development.

- ASABE Fellow. 2011.
- Henry Giese Structures and Environment Award. 2011. ASABE, St. Joseph, MI.
- Presidential Distinguished Service Award. 2010. ASABE, St. Joseph, MI.
- ISU Extension Team Achievement Award in Educational Programming. 2009. Community Assessment Model. C. Johnson, S. Hoff, **J. Harmon**, and J. Tyndall.
- College of Agriculture and Life Sciences Dean's Citation for Extraordinary Contributions to the College. 2009. Iowa State University, Ames, IA.
- College of Engineering Superior Extension Award. 2005. College of Engineering, Iowa State University, Ames, IA.
- ASAE Blue Ribbon Award for Educational Aids. 2005. E. Wheeler, F. Koenig, **J. Harmon**, P. Murphy, D. Freeman, K. Walker, J. Moore. Horse Facilities Handbook. MWPS-60. Midwest Plan Service, Ames, IA.
- ASAE Blue Ribbon Award for Educational Aids. 2005. M. Honeyman, **J. Harmon**, B. Koenig, J. Moore, K. Walker, M. Brumm, J. Kliebenstein, S. Shouse, D. Kammel, P. Lammers, T. Richard, J. Zulovich, S. Lonergan, R. Morrison. Hoop Barn Publication Series. Midwest Plan Service, Ames, IA.
- Inducted into Epsilon Pi Tau, Alpha Xi Chapter. Technology Honorary Fraternity. 2004.
- Iowa State University Extension Team Achievement – Managing Your Unseen Employee: The Ventilation System. 2004. **J. Harmon**, K. Arora, G. Breneman, K. Kohl, D. Meyer, S. Shouse, R. Euken, T. Miller, T. Steinhart, L. McMullin, M. Storlie, J. Weiss, and D. Stender.
- National Pork Board Swine Innovation Award, Education Category. 2004. "Use of a mobile ventilation laboratory (VL) for hands-on training of pork producers in building ventilation". S. Pohl, R. Thaler, M. Brumm, R. Stowell, **J. Harmon**, D. Stender, J. Weiss, L. Johnston, and L. Jacobson.
- Inducted into the Rural Builders Hall of Fame. 2003.
- Swine Carcass Composting Demonstration Program selected as a 2002 National Flagship Program of the Cooperative Extension Service's National Resources and Environmental Management Division. T. Glanville, **J. Harmon**, and T. Richard.
- ISU College of Agriculture Team Award. 2002. Swine Hoop Group. M.Honeyman, J. Kliebenstein, **J. Harmon**, T. Richard, B. Thacker, C. Hinrichs, S. Lonergan, D. Lay.
- ASAE Blue Ribbon Award for Educational Aids. 2001. M.Brumm, T. Funk, **J. Harmon**, G. Schnitkey and Midwest Plan Service Staff. Swine Wean-to-Finish Buildings. AED-46. Midwest Plan Service, Ames. IA.
- ASAE Blue Ribbon Award for Educational Aids. 2001. Glanville, T.D., **J. Harmon**, and T.L. Richard. Dissolving Swine Mortality Problems. Website at: www.abe.iastate.edu/pigsgone.
- Young Engineer of the Year, ASAE Iowa Section. 1999.
- ASAE Blue Ribbon Award for Educational Aids. 1999. M. Brumm, **J. Harmon**, M. Honeyman, J. Kliebenstein, J. Zulovich and the Midwest Plan Service Staff. Hoop Structures for Gestating Swine.
- ISU College of Agriculture Team Award. 1999. TEAMPork – T. Baas, D. Bundy, **J. Harmon**, P. Holden, J. Lawrence, J. McKean, W. Powers.
- ASAE Honorable Mention Paper Award. 1998. Neural Network Analysis of Postural Behavior of Young Swine to Determine Their Thermal Comfort State. J. Shao, H. Xin and J.D. **Harmon**.
- ASAE Blue Ribbon Award for Educational Aids. 1995. D. Bundy, E. Edwards, **J. Harmon**, P. Holden, D. Judd, J. Lamker, J. Lawrence, J. McKean. Community Nursery Handbook. ISU Extension.
- ASAE Blue Ribbon Award for Educational Aids. 1995. **J. Harmon**, H. Xin and E. Edwards. Environmental Guidelines for Swine Housing. Pm-1586a. ISU Extension Publication.
- Epsilon Sigma Phi, Extension Honorary Society, 1994
- Specialist Certificate of Merit. 1992. Awarded by the South Carolina Association of County Agricultural Agents.
- ASAE Blue Ribbon Award for Educational Aids. 1989. J.D. **Harmon**, E.R. Collins and F.B. Givens. Computer-aided animal waste utilization planning.
- Gamma Sigma Delta, Agricultural Honorary Society, 1986
- Alpha Epsilon, Agricultural Engineering Honorary Society, 1983
- Ceres, Agricultural Honorary Society, 1983

VIII. RESPONSIBILITIES

A. TEACHING / ACADEMIC ADVISING (25 Percent Appointment, varies year to year)

Teaching responsibilities include teaching the 2 course senior capstone design series and guest lecturing in various TSM and AE courses. Workshops are also conducted for veterinary medicine students.

1. Courses Taught

- a. AE 415 “Ag Engineering Design 1” – capstone design course
 - 2 credit course taught every semester S02-F07, F09, F10, F11-S13
 - Average of 15 to 20 students per semester
- b. AE 416 “Ag Engineering Design 2” – capstone design course
 - 2 credit course taught every semester S02-F07, S10, F11-S13
 - Introduced engineering company model for working with students on projects
 - Average of 15-20 students per semester
- c. AST 477X “Ventilation for Veterinarians”
 - 1 credit course taught 1998
 - 47 students
- d. ABE 478 “Design of Agricultural Structures”
 - Taught in S05, S07, S09, S11, S13, S15, S17 with Hoff, S19 with Crutchley
- e. TSM 327 “Animal Production Systems”
 - Taught F08 while instructor on sabbatical
 - Redeveloped 3 credit course taught in F14, F15, F16
- f. AnS 382 “Swine Environmental Management”
 - Online 1 credit course offered through the Swine Science Online Program
 - Taught S10, F10, SS12, S13, S14, F14, F15, F16, F17, F18, F19, F20, F21
- g. AnS 383X “Swine Manure and Nutrient Management”
 - Online 1 credit course offered through the Swine Science Online Program
 - Taught S11, S12, SS13
- h. AnS 495 Study Abroad
 - Denmark, Sweden and Finland Co-led with Tom Baas (21 students) May 2014
 - Japan and China co-led with Maynard Hogberg (24 students) May 2016
- i. Others
 - Provide a ventilation lab for AnS 225 each semester, 1998-2017
 - Provide a ventilation lab for AnS 425 each spring semester since 2012
 - Lecture swine production medicine courses as required on ventilation
 - Teach various AE 490 independent study courses.

2. Advising

- a. Ag Engineering Students – 12 students in 03-04
- b. Ag Systems Technology Students – 21 students in 04-05

3. Club Advising

- a. ASAE student club advisor – 1995-1997
- b. Ag Systems Technology club advisor – 2001 – 2008.

B. RESEARCH AND ARTISTIC CREATIVITY (25 Percent Appointment)

Responsibilities in research include the development of an applied research program related to livestock production systems which will benefit the citizens of Iowa, with profound impacts regionally, nationally and internationally. Areas of special interest include: air quality and the relation to animal/worker health concerns, evaluation of innovative housing designs, evaluation of animal energetics, and design of facilities to meet the needs of modern swine production. Listings of grants, publications and ongoing work appears in a later section.

GUIDANCE OF GRADUATE STUDENTS

Graduate Students Advised:

- Ben Smith – AST MS Student – Co-advisor with Dr. Steve Hoff – completed 3/18.
- Jeremiah Davis – PhD Student – Co-advisor with Dr. Hongwei Xin – completed 8/07
- David Van Utrecht – MS Student – Co-advisor with Dr. Steve Hoff - completed 5/99.
- Simon Davis – PhD Student – Advisor – student transferred to divinity school after 1 year.

Graduate student committees:

- Sara Weyer – ABE MS Student – Advisor: Dr. Brett Ramirez – completed 2021
- Ben Smith – IAT PhD Student – Advisor: Dr. Brett Ramirez – completed 2021
- Sarah Smith – AgEd PhD Student – Advisor: Dr. Greg Miller – completed 2021
- Jadhav Harishchandra – PhD Student – Advisor: Dr. Steve Hoff – completed 2017
- Katlyn DeVoe – MS Student – Advisor: Dr. Steve Hoff – completed 2017
- Brent Ramirez – PhD Student – Advisor: Dr. Steve Hoff – completed 2017
- Gang Sun – PhD Student – Advisor: Dr. Steve Hoff – completed 2010
- Angela Green – PhD Student – Advisor: Dr. Hongwei Xin – completed 2008
- Xiuyan Yang – PhD Student – Advisor: Dr. Koziel – Did not complete
- Lide Chen – PhD. Student – Advisor: Dr. Steve Hoff – completed 2008
- Pete Lammers – PhD Student – Advisor Dr. M Honeyman – completed 2009
- Pete Lammers – MS Student – Advisor: Dr. M. Honeyman – completed 2006
- Joel Morrical – MS Student – Advisor: Dr. M. Honeyman- completed 2005
- Dave Serfling – MA Student – Advisor: Dr. M. Honeyman - completed 2005
- Rachel Cook – MS Student – Advisor: Dr. Hongwei Xin - completed 2005
- Kelly Persyn – MS Student – Advisor: Dr. Hongwei Xin – completed 5/03
- Bin Shao – MS/PhD Student - Advisor: Dr. Hongwei Xin – completed 11/03
- Justin Chepete – PhD Student – Advisor: Dr. Hongwei Xin – completed 4/02
- Mike Larson – MS Student – Advisor: Dr. Mark Honeyman – completed 9/00
- Greg Domino – MS Student – Advisor: Dr. Tom Baas – did not complete
- Brad Woerner – MS Student – Advisor Dr. Dwaine Bundy – completed 11/98
- Jianing Hu - MS Student - Advisor: Dr. Hongwei Xin - completed 7/98
- Zeki Gokalp - MS Student - Advisor: Dr. Dwaine Bundy – completed 5/98
- Junqing Shao - PhD Student - Advisor: Dr. Hongwei Xin - completed 11/97
- Han Tao - MS Student -Advisor: Dr. Hongwei Xin - completed 5/97
- Kichang Lee - MS Student - Advisor: Dr. Hongwei Xin - completed 4/96

C. EXTENSION AND/OR PROFESSIONAL PRACTICE (50 Percent Appointment)

Responsibilities in Extension include the development and delivery of educational materials related to livestock production systems to benefit the citizens of Iowa, with profound impacts regionally, nationally and internationally. Areas of special interest include: efficient management of ventilation and heating systems for swine housing, improved swine conception rates through environmental modification, and improved profitability/sustainability through a systems approach to livestock housing.

Major program activities include:

- *Air Quality Extension (2005-2014)*
 - Serve as group leader for the air quality initiative. Team is multi-disciplinary team.
 - Led the effort to develop an air quality workshop to be delivered in 2006.
 - Led the development of a legislative initiative worth more than \$23M in 2008 which went unfunded.
 - Advised more than 200 producers-to-date related by running an odor assessment model (CAM) for building siting to minimize odors.

- Developed a new version of the Air Management Practices Assessment Tool
<http://www.agronext.iastate.edu/ampat/>
- *TEAMPork* 1994-01
Multi-disciplinary team with the goal is to assist swine producers or groups of producers in evaluating options for expansion, transfer to the next generation, or the development of a network. The recommendations focus on a systems approach to swine production. Information is then utilized to help other producers that are considering similar activities.
- *Iowa Frame Builders Conference* (1995-2001, 2004)
This educational conference was developed as a means to improve the general quality of agricultural construction in the state of Iowa. This was viewed as a program that would multiply efforts because builders would improve, thereby benefiting farmers as well. Educational topics have focused primarily on livestock buildings but general topics have also been covered to broaden the audience.
- *Ventilation Programs (various)*
Several major ventilation programs have been developed over the last 15 years. A series of workshops on natural ventilation systems was developed in cooperation with Steve Hoff. Another program used ventilation controller training units to help livestock producers to better understand and more efficiently use controllers. The most recent program was developed in cooperation with South Dakota, Nebraska and Minnesota and included the usage of a full scale ventilation model in a day-long workshop. Working with the swine field specialists a three tier curriculum was developed to go with the new ventilation demonstration trailer that was constructed. Since 2011 a total of 54 workshops have been held for a total of 918 attendees that stated they had influence over nearly 76M pigs produced per year.
- *Midwest Plan Service (1994-present)*
In a regional cooperative effort with other agricultural Extension persons, several publications were developed, reviewed and used in Extension education. These are used throughout the US and the world on various swine topics. Leadership for Midwest Plan Service has also been provided since 2005.
- *Hoop Barn Programs (1995-2000)*
Based on participation in research of hoop barn production systems for swine done here at ISU, outreach efforts have been developed and recognized throughout the world. This effort includes various invited talks, development of a web site and Midwest Plan Service publications, and the hosting of a conference which drew international guests. Work continues with beef in hoops.

D. INTERNATIONAL ACTIVITIES

- SRS Webinar -Breeding barn design and ventilation – Chinese audience (2021) ~ 800
- China- invited to speak at International Swine Reproduction Symposium (2018)
- China – invited to speak on ventilation to swine producers (2017)
- Asia – study abroad to Japan and China (2016)
- Europe – study abroad to Denmark, Finland and Sweden (2014)
- Europe – visited Holland, Germany and Ireland with swine specialists to learn about sow housing issues (2013)
- China – worked with cooperators on a swine hoop facility project. 2004-2008 (3 trips)
- China, 2009- Invited by the Chinese government to present information on the use of hoops for swine and beef production to regional extension specialists throughout China. Also presented

- information on ISU Extension and the land-grant system to administrators.
- Vietnam- gave talks on swine farm design for the US Grain Council. 2009
- Hosted various international guests at ISU during visits to the US.

E. SERVICE

Participation in regional and national committees has been a high priority. Regional committee work is listed below. National committee work is listed under professional associations.

Regional Committee Involvement

- ASAE
 - Mid-central ASAE Conference Planning (1996-2001)
 - Program Chair – 2000
 - Conference Chair – 2001
- Great Plains Center for Agricultural Health
 - External Advisory Committee – 2021-current
- Midwest Plan Service - MWPS is comprised of extension and research agricultural engineers from 12 Midwestern universities with headquarters at Iowa State University. MWPS produces educational publications for the agricultural audience.
 - Professor-in-charge (2005-present)
 - Liaison to NCCC-9 and ISU ABE Department (2005-present)
 - Chair of the Executive Committee (2002-2004)
 - Vice Chairman of the Executive Committee (2001-2002)
 - Full Committee Extension Representative (1994-present)
 - Building Environment Section Committee (1994 - 2004)
 - Author Committee for revision of MWPS-32
 - Author Committee for development of MWPS-43, 1998-2001
 - Author Committee for development of AED-41, 1996-7, 2003-04
 - Author Committee for development of AED-44, 1998-9, 2003-04
 - Author Committee for development of AED-46, 1999-2000.
 - Author Committee for development of AED-47, 2003-04.
 - Author Committee for development of AED-50, 2003-04.
 - Author Committee for development of AED-52, 2003-04.
- Midwest Rural Energy Council
 - Ex-officio member of the board, 2008-2021
- Pork Industry Handbook Committee/Porkgateway – Committee formed to prioritize, seek authorship, author and review publications for in the Pork Industry Handbook which is circulated world-wide. This effort is now led and funded by the National Pork Board.
 - Full Committee, 1999 – 2008.
 - Domain Editor, 2003- 2008
- North Central Region Committees
 - NC Extension Ag Program Directors, 2017-present
 - Secretary 2020-2021
 - Chair 2021-2022
 - NCR-89, Swine Management Research Committee (1995-present)
 - secretary 1997

- chair 1998
 - meeting host 1999, 2000
- NCCC-9 MWPS (1994-present)
- NCR Extension Ag Engineers Workshop Planning Committee (1997-98), chair
- NCR Extension Specialist Triennial Workshop Committee (1999-2000)
- Southern Region Extension Agricultural Engineers
 - Reestablishment of Cooperative Farm Building Plan Exchange Ad Hoc Committee (Southern Region, 1991-93)

University Committee Involvement

- Iowa State University
 - IIC Board, Ex-officio, 2021- present
 - Search committee for ABE chair, 2021
 - Search committee for Egg Industry Center Director, Chair, 2019
 - AAI Executive Board, Ex-officio, 2017 – present
 - Feed Mill and Grain Science Center Planning Committee – Chair, 2017 - 2021
 - ISU Swine Day Planning Committee – 2015-present
 - Iowa Pork Producers Association Board – ex-officio 2014-2015
 - Extension Plan of Work leader – Swine production – 2014-2015
 - Extension Plan of Work leader – Agricultural Systems and Environmental Stewardship – 2013-present
 - Art in State Building Committee, 2011-2016, chair
 - COE Promotion and Tenure Committee, 2011-2012
 - CALS Promotion and Tenure Committee, 2010-2011
 - Search Committee for the Dean of Engineering 2008-2009
 - Biorenewables Complex Steering Committee, 2007-2014
 - CALS Air Quality Initiative – Coordinator 2003-2010
 - College of Engineering Scholarship Committee, 2003-2008
 - Search committee for Extension Ag Engineering FS, 2007
 - Davidson Hall construction feasibility study, 2004-2005
 - Search committee for ANR Extension Director. 2003-04.
 - Search committee for swine veterinarian position. 2000.
 - Bilsland Breeding Farm Planning Committee, 1995-6, 2003-2006
 - Swine Teaching Farm Planning Committee, 1995-6
 - Search committee for the director of the Iowa Pork Industry Center. 1999-2000.
- Clemson University
 - Dairy Management Systems Program Team, 1989-1991
 - Swine Evaluation Relocation Committee, 1989-93
 - Sheep and Goat Research Facility Design Committee, 1992

Departmental Committee Involvement

- Iowa State University
 - Space Advisory Committee, 2005-2010, vice chair. 2011, chair 2012-2018
 - Awards Committee 2000-2005, 2012-2018
 - Lecturer Search Committee, 2013, chair
 - Extension Ag Engineering Field Specialist search committee, 2009-2012
 - Biorenewables Complex, Art in State Buildings Committee, Chair 2011-2015
 - ABE Building Planning Committee, Chair 2007- 2015
 - Diversity Committee, 2010-2011

- Promotion and Tenure Committee, 1994-95, 1998-99, 2005-06 (chair), 06-10, 15-16
- Social Committee, 1994-96, 1997-98, 1998-99, 1999-2000, 2000-2001, 2004-05.
- Scholarship Committee 2000-1, 2003- 2008 (chair), 08-14
- ASAE Student Branch Advisor. 1995-97.
- AST Student Branch Advisor. 2002-2008.
- Centennial Committee. 2003-5.
- Air Quality Engineer Search Committee, 2004.
- MWPS Marketing Position Search Committee, 2005.
- Clemson University
 - Curriculum Committee, Ad Hoc Member, 1992
 - Seminar Committee, Chair, Spring 1991, Fall 1992
 - Research Associate Search Committee, 1991
 - Extension/Research, Water Quality Search Committee, Spring 1990
 - Student Faculty Social, Fall 1990, Fall 1993
- Private Organizations
 - Agribusiness Association of Iowa
 - Ex-officio member of the board (2017-present)
 - Iowa Institute of Coops
 - Ex-officio member of the board (2021-present)
 - Iowa Pork Producers Association
 - Ex-officio member of the board (2014-2015)
 - Election Committee (2016-present)
 - Animal Welfare Research Committee (2016-present)
 - National Frame Builders Association
 - Judge for the "NFBA Building Contest", 1995, 1998, 2002.
 - Iowa Farm Bureau
 - Judge for the "Farmer Inventions Contest", 1994, 1995, 1996, 1997, 1999.
 - National Hog Farmer Magazine
 - New Products Review Committee, 1992, 2008 World Pork Expo
 - National Pork Producers Council and National Pork Board
 - National Pork Board, PIGateway Domain Editor (2004-2008)
 - Agricultural Technology Evaluation Program Task Force, 2000
 - Committee to Update the Swine Care Handbook, 2000-2.
 - Production Systems Committee (2001-2006)
 - Alternative Sow Housing Committee (2003-4)
 - Midwest Rural Energy Council
 - Board of Directors, ISU rep (2003-present)

IX. PUBLICATIONS

A. Refereed Articles

Ramirez, B. C., Hoff, S. J., Hayes, M. D., Brown-Brandl, T. M., **Harmon**, J. D., & Rohrer, G. A. (2022). A review of swine heat production: 2003 to 2020. *Frontiers in Animal Science*. doi: [10.3389/fanim.2022.908434](https://doi.org/10.3389/fanim.2022.908434)

Hong, M., Brown-Brandl, T. M., Ramirez, B. C., Hoff, S. J., Rohrer, G. A., Sharma, R., Hayes, M. D. & **Harmon**, J. D. Determining heat and moisture production rates in group housed gestating sows with ESF system. *Journal of the ASABE*. In preparation

Weyer, S.E., B.C. Smith, B.C. Ramirez, J.D. **Harmon** and D.S. Andersen. 2021. A general purpose laboratory for small-scale in-barn swine discoveries. *Applied Engineering in Agriculture*: 37(5): 941-949. [doi: 10.13031/aea.14411](https://doi.org/10.13031/aea.14411)

Lane KJ, Johnson AK, Stilwill CEJ, Karriker LA, **Harmon** JD, Stalder KJ. 2020. Comparison of heat lamps and heat mats in the farrowing house: effect on piglet production, energy use, and piglet and sow behavior through live observation. *J Swine Health Prod.* 2020;28(4):205-212.

Lane, K. J., A. K. Johnson, J. D. **Harmon**, L. A. Karriker, and K. J. Stalder. 2020. Comparison of Heat Lamps and Heat Mats in the Farrowing House: Effect on Piglet Production, Energy Usage and Piglet and Sow Behavior through Digital Observation. *EC Veterinary Science* 5:18-26.

Smith, B. C., Hoff, S. J., **Harmon**, J. D., Andersen, D. S., Zimmerman, J. J., & Stinn, J. P. 2019. Quantification of Site Layout and Filter Characteristics on Primary Filter Airflow Reduction on Commercial Swine Sites in Iowa. *AgriEngineering*, 1(2), 291–302. <https://doi.org/10.3390/agriengineering1020022>

Smith, B.C., B.C. Ramirez, S.J. Hoff, J.D. **Harmon**, J.P. Stinn. 2019. Design and validation of a mobile air filter testing lab for animal agricultural applications. *Agricultural Engineering International: CIGR Journal*: 21(3), 39-50.

Jadhav, H, S.J. Hoff, J.D. **Harmon**, and D.S. Andersen. 2018. Swine Finishing Room Infiltration: Part 2. Infiltration as Affected by Room Characteristics. *Applied Engineering in Agriculture* 34(4):735-745.

Jadhav, H., S.J. Hoff, J.D. **Harmon**, and D.S. Andersen. 2018. Swine finishing room infiltration: Part 1. Quantification and prediction. *Applied Engineering in Agriculture* 34(2):413-424.

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G. GENERAL AUDIENCE MATERIALS

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H. TRAINING MANUALS

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I. EDUCATIONAL STRUCTURAL PLANS

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J. VIDEO

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K. OTHER

Internet Web Page

- AMPAT web page developed 2014
 - <http://www.agronext.iastate.edu/ampat/>
- Oversight/Cooperator of bedded livestock systems web page (2004)
 - <http://www.abe.iastate.edu/abls/>
- Cooperator on emergency composting web page (2003-present)
 - www.abe.iastate.edu/cattlecomposting/

- Cooperator on swine composting web page (2001-present)
 - www.abe.iastate.edu/PigsGone/index.htm
- Lead on hoop structures web page (1998-present)
 - www.abe.iastate.edu/hoop_structures/
- Contributions to the ABE department page (1996-present)
 - www.abe.iastate.edu

Conference Coordination

- Iowa Frame (Previously Farm) Builders Conference. Ames, IA.
 - Conceptualize and initiated.
 - Coordinated.
 - Annual meeting held 1994-2001, 2004.
- Concrete Conference. Ames, IA. 2003.
 - assisted Bill Koenig with coordination
- National Conference on Hoop Barns and Bedded Systems for Livestock Production. Ames, IA 2004.
 - Planning Committee

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Buschermohle, M.J., R.A. Spray and J. D. **Harmon**. 1989. LIGHTING: Lighting Alternative Spreadsheet. Compares fluorescent to incandescent lighting in poultry houses. Agricultural and Biological Engineering Extension, Cooperative Extension Service, Clemson, SC.

Demonstration Apparatus

SWINE VENTILATION DEMONSTRATION TRAILER: Developed and constructed a ventilation demonstration unit using a 24' trailer. Donations were secured from AP, Valco and Multifan to assist with the effort. Developed in 2013.

VENTILATION CONTROLLERS: Four different ventilation controllers were mounted on boards with miniature fans and lights (to simulate a heater). These demonstration units illustrate the principles of electronic controller operation. Developed in 1998.

FLUSH: A plexiglas flush tank was constructed to illustrate the principles of automatic siphon flush tank design to swine producers. This demonstration helps to emphasize what is important during tank construction. Developed in 1992.

WIRE SIZE: A demonstration was developed which illustrated the need for proper electrical wire size. This was used with poultry producers because of long distances that wiring must be run in broiler houses. Developed in 1991.

FAN: A fan performance demonstration unit was constructed. This allowed demonstration of fan performance in relation to static pressure. Livestock and poultry producers can visualize principles of mechanical ventilation with the aid of this unit. Developed in 1991.

VENTILATION: Anemometers, manometers, ammeters and smoke tubes were used to demonstrate principles of proper fan installation and maintenance, as well as the principles involved with proper inlet control. Livestock and poultry producers have benefited from this. Developed in 1991.

X. PATENTS, OR NEW PLANT OR ANIMAL VARIETIES

Method and Means for Automated Variable Heater Control for Agricultural Unit Heaters. 2002. S.J. Hoff, J.D. **Harmon**, and D. Van Utrecht. US Patent No. 6,360,955

XI. GRANTS AND CONTRACTS

GRANTS FUNDED - Principal or Co-Principal Investigator

Modern pigs urgently need facilities with modern ventilation: Updating swine ventilation standards/guidelines. B. C. Ramirez, M. D. Hayes (ABE, UKY), T. Brown-Brandl (ABE, UNL), J. D. **Harmon** (ABE), S. J. Hoff (SJHAgriVent), G. A. Rohrer (USDA ARS). \$300,000. USDA/NIFA AFRI: Critical Agricultural Research and Extension. 9/1/20 to 8/31/23

Small-scale, in-barn carcass management exploration. Funded by Iowa Pork Producers Association. Ramirez, Greiner, Rademacher, Andersen, **Harmon**, Peschel, and Koziel. \$80,000. 2019-2021

To pit ventilate or not pit ventilate, that is the question we aim to answer and generate evidence-based resources for producers. Funded by the Iowa Pork Producers Association. \$52,975. 2019-2020. Ramirez, Andersen, **Harmon**.

Small-scale, in-barn carcass management exploration. Funded by the Iowa Pork Producers Association. \$80,000. 2019-21. Ramirez, Greiner, Rademacher, Andersen, **Harmon**, Peschel, Koziel.

Modeling indoor environment and supplemental heat requirements during ventilation shutdown and heat inactivation of viruses. Funded by the Iowa Pork Producers Association. \$20,000. 2019-20. Ramirez, Greiner, Rademacher, Andersen, **Harmon**.

To pit ventilate or not to pit ventilate, that is the question we aim to answer and generate evidence-based resources for producers. Funded by Iowa Pork Producers Association. \$52,975. 2019-2020. Ramirez, Andersen, **Harmon**

Manure management technologies assessment and recommendations. Funded by the North Carolina Pork Council. \$15,000. 2018-19. **Harmon.**

Manure Applicator Certification Training. Funded by Iowa DNR. \$414,000. 2018-2020. Andersen, **Harmon.**

Manure Applicator Certification Training. Funded by Iowa DNR. \$432,055. 2017-2019. Andersen, **Harmon.**

Design and assessment of a novel cooling control algorithm and system for swine heat stress alleviation. Funded by National Pork Board. \$101,765. 2017-2020. Hoff, Ramirez, Patience, **Harmon.**

A comparison study of barn controllers. Funded by Pigtek Americas. \$32,000. 2016-2017. Hoff, Ramirez, **Harmon**

Energy management for agricultural production. Funded by Leopold Center. \$7,500. Hanna, **Harmon.**

Comprehensive evaluation of wet scrubber and photocatalysis technologies for mitigation of particulate matter, odor, volatile organic compounds, ammonia, and hydrogen sulfide emissions. Funded by the Indiana Soybean Alliance. \$138,000. 2015-2016. Koziel, J.A., D.S. Andersen, J. **Harmon**, S. Hoff, S. Trabue, and D. Maurer.

Improvements to the Air Management Practices Tool (AMPAT): Phase 1. Indiana Soybean Alliance, Indiana Corn Marketing Council and Indiana Corn Growers Association. \$67,900. 2013-2014. Koziel, **Harmon**, Hoff, Rieck-Hinz.

Development of new barn commissioning and building component integrity protocols for swine housing systems. Funded by the Iowa Pork Producers Association. \$116,000. 2014-2016. Hoff, **Harmon**

Ventilation Improvements for Controlling Swine Production Systems. National Pork Board. \$126,398. 2013-2015. Hoff, **Harmon.**

Evaluating Strength, Sharpness, and Detection of Swine-Use Hypodermic Needles. National Pork Board. \$75,381. 2013-2015. Hoff, **Harmon.**

Evaluation of Transportation Conditions on Performance of Weaned and Feeder Pigs. National Pork Board. \$58,204. 2013-2014. **Harmon**, Hoff, Xin and Baas.

Evaluating strength, sharpness and detection of swine-use hypodermic needles. Funded by National Pork Board. \$75,594. 2013-2015. Hoff, **Harmon**

ISU Farm Energy: Applying Energy Efficiency to Farm Enterprises. Iowa Energy Center. \$291,003. 2012-2015. Hanna, **Harmon**, Petersen.

Air Management Practices Assessment Tool – A Producer Guide to Comparing Mitigation Strategies. National Pork Board. \$22,118. 2012-2013. **Harmon**, Rieck-Hinz, Hoff

Demonstrating Farrowing Alternatives for Small Farms: Insulating Tents for Sows and Pigs. ISU Leopold Center for Sustainable Agriculture. 2012-2015. \$59,974. **Harmon**, Lammers

Implementation of Biofiltration Technology. USDA:NRCS:CIG. \$258,500. (subcontracted with University of Idaho, \$125,297. ISU 2011-2014. Chen, Hoff, **Harmon**

Evaluating Deep-pit Swine Finishing House Ammonia Concentration and Emission as a Function of Manure Surface Treatment Using Juergens, Inc Proprietary Application Product. Juergens Produce and Feed Company. \$34,544. 2010-2011. Hoff, **Harmon**.

Development of a new ventilation demonstration unit. Iowa Pork Producers Association. \$18,000. 2009-2010. **Harmon**

A New Generation: Farm Energy Conservation and Efficiency Initiative. Iowa Energy Center. \$244,509. 2009-2012. Hanna, **Harmon**, Bregendahl, Harding

Mitigation Monitoring and Microbial Assessment of Gas-Phase Biofilters and Extension Outreach. USDA-AFRI. \$597,806. 2010-2013. Janni, Jacobson, Schilling, Gates, **Harmon**, Hoff, Nicolai.

Water Consumption and Conservation Techniques Currently Available for Swine Production. National Pork Board. \$19,199. 2009-2010. Burns, Moody, **Harmon**, Stalder, Muhlbauer.

National Air Emissions Monitoring Study. EPA via Purdue University. \$80,000. 2009-2010. Koziel, Hoff, **Harmon**.

US Regional Swine Schools. USDA, CSREES. 2007-2010. \$460,787. Meisinger, Baas, Kliebenstein, **Harmon**, Karriker.

Ammonia and Particulate Matter Emissions from Midwest Turkey Houses. Iowa Turkey Federation. 2007-2009. \$15,000. Xin, Burns, **Harmon**, Hoff

Evaluation of the Effectiveness of the Iowa State University Community Assessment Model in the Siting of Swine Production Units. Iowa Pork Producers Association. 2007-08. \$30,000. **Harmon** and Hoff.

Matching Support for the CIG Grant: Development of a National Air Quality Self Assessment Tool for Livestock Producers. Iowa Pork Producers Association. 2007-2008. \$10,000. **Harmon**, and Rieck-Hinz.

Matching Support for the CIG Grant: Development of a National Air Quality Self Assessment Tool for Livestock Producers. Iowa Turkey Federation. 2007-2008. \$10,000. **Harmon**, Rieck-Hinz, Arora, Brennehan, Shouse, Kohl.

National air emissions monitoring study. EPA. 2007-2009. \$226,609. Koziel, Hoff, **Harmon**.

Determining Ammonia Particulate Matter Emissions from Midwest Turkey Grow-out Buildings. USDA. 2007-2009. \$499,933. Xin, Burns, Hoff, **Harmon**, Koziel.

Use of Bedded Hoop Structures as an Alternative Swine Housing System to Improve Environmental Soundness & Water Resources. USDA/FAS/ICD/RSED. 2004-2008. \$45,000. **Harmon**, Xin.

Development of the MWPS Housing Handbook. USDA. 2006. \$2000. **Harmon**.

Development of the MWPS Housing Handbook. USDA. 2005. \$3000. **Harmon**.

Iowa State University Odor and Air Pollutant Mitigation from Animal Production Facilities Multidisciplinary Project Proposal. College of Agriculture. 2004-2007. \$305,000. **Harmon**, Burns, Stalder, Powers, Xin, Koziel, Colletti, Osweiler.

Integration and validation of a radio frequency identification system and automatic scale technology for real-time correlation of management and disease impacts on the performance of swine in field studies. Iowa Healthy Livestock Initiative. 2004-05. \$19,857. Karriker, **Harmon**, Stalder, Baas.

Partial Biofiltration of Swine Exhaust Air to Maximize Odor Reduction Potential. Iowa Pork Producers Association. 2004-2005. \$80,000. Hoff, **Harmon**, Janni (UM), Schmidt (UM), Nicolai (SDSU).

Development of Practical and Effective Measurement Technique and Protocols for Evaluating Source and Downwind Emission Levels and Mitigation Strategies for Swine Operations. Iowa Pork Producers Association. 2003-04. \$103,600. Hoff, Xin, Bundy, Richard, Lorimor, **Harmon**, Powers.

Measurement and Mitigation of Odor and Air Emissions from Concentrated Animal Feeding Operations. Special Grants Program. CSREES. 2004-2006. \$250,731. Kanwar, Hoff, **Harmon**, Bundy, Xin.

Verification of Odor Dispersion Modeling for Siting of Livestock and Poultry Production Systems. NRI. 2003-2005. \$499,800. Hoff, Schulte, Jacobson, **Harmon**, Schmidt, Henry.

Alternative Farrowing Systems During Cold Weather. 2002-5. Leopold Center for Sustainable Agriculture. \$25,064. Renewal 2003: \$20,770 Renewal 2004:\$25,829. M. Honeyman, J. **Harmon** and J. Kliebenstein.

Hoop Barns for Livestock: An alternative sustainable housing system. 2002–2006. USDA Special Grant. \$187,072. Renewal 2003: \$195,000. Renewal 2004: \$272,088. M. Honeyman, J. Kliebenstein, J. **Harmon**, C. Hinrichs, S. Longergan, T. Richard, B. Thacker.

Investigate the Feasibility and Safety of Using On-Farm Composting for Emergency Disposal of Infected Animal Carcasses. Iowa DNR. 2002-2003. \$125,012. Renewal 2003: \$116,760. Renewal 2004: \$38,228. T. Glanville, T. Richard, J. **Harmon** and D. Reynolds.

Survey Monitoring of Environmental Factors from Bedded Swine Systems. National Pork Board. \$57,240. 2001-2002. J.D. **Harmon**, D.S. Bundy, T.L. Richard, S.J. Hoff.

Ammonia, Nitrous Oxide, and Methane Emissions from Deep-Bedded Hoop Structures. National Pork Board. \$60,492. 2001-2002. T.L. Richard, S.J. Hoff, D.S. Bundy and J.D. **Harmon**.

Updating Heat and Moisture Production Rates of Poultry and Their Housing Systems. ASHRAE. \$124,572. 1999-2001. H. Xin, J.D. **Harmon**, J. Sell, and M. Puma.

Demonstration of Swine Carcass Composting as Part of an Environmentally-Friendly Production System. Leopold Center. \$47,200. 1999-2001. J.D. **Harmon**, T. Glanville, and T. Richard.

Effects of Fluctuating Temperatures on Isowean PIC Pigs. PIC USA. \$28,576. 1998-99. H. Xin, D.L. Harris, J.D. **Harmon**, R.C. Ewan, Q. Zhang, and M. Puma.

Responses of PIC Isowean Pigs to Simulated Overseas Transportation Conditions. PIC USA. \$25,586. 1998. H. Xin, J.D. **Harmon**, D.L. Harris, and R.C. Ewan.

Hoop Structures for Grow-Finish Swine in Iowa. Leopold Center Initiative. \$239,000. 1997-2002. J. **Harmon**, M. Honeyman, J. Kliebenstein, D. Lay, B. Thacker and T. Richard.

Development of an Energy Conservation Education Program for Iowa's Livestock and Poultry Industry. Iowa Energy Center. \$50,718. 1997-9. J.D. **Harmon**, H. Xin, S. Hoff, D. Mangold, T. Baas, J. McKean.

Developing Tools to Integrate animal manures into precision nutrient management planning. Multi-State Consortium on Animal Waste. \$28,700. 1997-98. D. Ess and **Harmon**.

Hoop Structures for Grow-Finish Swine in Iowa. Iowa Pork Producers Association. \$10,000. 1997-98. M. Honeyman, J.D. **Harmon**, J. Kliebenstein and T. Richard.

Economic Evaluation of Finishing Facilities and the Development of a Decision-Aid Energy Estimator Program for the Swine Industry. Iowa Pork Industry Center. \$13,400. 1996-8. J.D. **Harmon**, S.J. Hoff, H. Xin, T.J. Baas, C.W. Watson and J. McKean.

Conference Support for the Iowa Farm Builders Conference. Iowa Energy Center. \$2000. 1997. J.D. **Harmon**.

Optimizing Energy Efficiency of Heat Lamps Based on the Thermal Needs of Baby Pigs. Iowa Energy Center. \$52,040. 1996-8. H. Xin, S.J. Hoff and J.D. **Harmon**.

Development of an Automated Controller for Naturally Ventilated Livestock Facilities. Iowa Energy Center. \$95,554. 1994-6. S.J. Hoff, J.D. **Harmon**.

Determination of Management and Facility Effects on Air Quality within Swine Facilities. ISU College of Engineering Research Seed Grant. \$4143. 1994. J.D. **Harmon**

Utilization of a Micro-computer Based Environmental Control System for Commercial Broiler Facilities to Reduce Energy Use and Improve Economic Returns. South Carolina Governor's Office, Division of Energy, Agriculture and Natural Resources. \$15,000. 1992-4. J.D. **Harmon**, and P.A. Skewes .

Energy Audits of Farm Facilities. South Carolina Governor's Office, Division of Energy, Agriculture and Natural Resources. \$46,500. 1989-90. J.D. **Harmon**, and R.A. Spray.

Computer Simulation and Optimization of a Swine Facility. American Society of Heating, Refrigerating and Air-conditioning Engineers, \$6,000. 1988. J.D. **Harmon**, and E.R. Collins.

GRANTS FUNDED - Cooperator

Evaluating a Low-Cost Cooling Method to Sustain Livability and Productivity of Laying Hens during Summer Heat Waves in Iowa. CATD. \$28,534. 1996-99. H. Xin

Building Ventilation Strategies for Odorous Gas Emissions. Iowa Commodity (corn/soybean/swine) Funds. \$119,783. 1995-98. S. Hoff.

Image Analysis of Swine Postural Behavior to Improve its Thermal Comfort. Iowa Pork Producers Association. \$18,000. 1997-8. H. Xin

Evaluating Combined Mechanical/Biological Swine Odor Scrubbing Systems. Multi-state Odor Research Consortium. \$22,335. 1996-7. S. Hoff.

Evaluating Time-Weighted Ammonia Exposure Levels in Swine Facilities. Iowa Pork Producers Association. \$17,740. 1994-5. S. Hoff.

Conservation of Soil and Water Resources via Expert System Educational Delivery Techniques, Proposal for Joint Activity with the Republic of Ireland. USDA Office of International Cooperation and Development. \$59,835. 1993-5. F. Wolak.

XII. MENTOR FOR VISITING SCIENTISTS AND POSTDOCTORAL STUDENTS

None

XIII. SIGNIFICANT PRESENTATIONS (selected)

Four different facility talks. International Swine Reproduction Symposium, Changsha, China May 8-9, 2018 (~250) and Muyuan Foods, Henan Province, presentation to staff (~600), May 10. Invited

Various Ventilation talks. Yongxin Farms Conference (~150), Guangxi Yongxin Farms, Nanning City, China and Future Leaders of Young Veterinarians (FLY-V Seminars) (~250). Zengzhou City, China. November 2017. Invited.

Barn Air Quality: Acute & Chronic Issues. Swine Educators Training. National Pork Board. September 30, 2015. Invited.

Group Housing Systems: New and Conversion Construction. Sow Housing Webinar Series. National Pork Board. April 16, 2013. Invited.

Capturing energy savings through proper ventilation management. Iowa Swine Day. June 28, 2012. Ames, IA. *Invited.*

Energy Conservation in Swine Barns. Iowa Energy Summit. October 18, 2011. Ames, IA. *Invited.*

ISU Research, Programs and Assistance. IPPA. September 7, 2010. *Invited.*

Air Quality and Livestock: An Iowa Perspective. Wisconsin DNR. May 11, 2010. *Invited.*

Modern Farm Design. USGC sponsored workshop. Vietnam. November, 2009. *Invited.*

Swine and Beef Hoop Production. Chinese government training for regional Extension personnel. Beijing, China. September 8, 2009. *Invited.*

Energy Use at the Farm Level. 2009 Pig Group Seminar. Copper Mountain, CO. February 21, 2009. *Invited*

Ventilation: Managing your Energy Bill. Boehringer-Ingelheim Seminar for Swine Producers. Coralville, IA. August 7, 2008. *Invited*

10 Steps to Managing Odor on the Farm. World Pork Expo. June 8, 2007. *Invited*

Steps to Managing Odor. Iowa Corn Board. June 14, 2007. *Invited*

Ventilation Management and Reducing Energy Costs. Iowa Pork Congress. January 26, 2006. *Invited*

Sow Housing – a Continuing Evolution. Nebraska Pork and Livestock Expo. February 7, 2006. *Invited.*

Educational Programs: Alternative Swine Housing Educational Programs. Certification and Education Programs: Current Status of Farm Animal Welfare. Future Trends in Animal Agriculture. USDA, Washington, D.C. September 2005. *Invited.*

Alternative Swine Housing Systems: Is profiting from perceived animal welfare ethical? Iowa State University Animal Think Tank. October 25, 2005. *Invited.*

Hoop production systems for swine and carcass composting. Chinese Academy of Agricultural Sciences. May, 2005. *Invited.*

Alternative Swine Housing Systems for Gestation, Lactation, Nursery and Finishing. 2004. Washington Pork Producers' Educational Seminar. Pasco, WA. February 6. *Invited.*

Sow Housing Options for Gestation. 2004. National Pork Board. Des Moines, IA. June 9. *Invited.*

Understanding Ventilation Controllers. 2003. Minnesota Poultry Ventilation School. St. Paul, MN. October 7. *Invited.*

Survey Monitoring of Environmental Factors from Bedded Swine Systems. 2003. International Symposium on Gaseous and Odour Emissions from Animal Production Facilities. CIGR. Horsens, Denmark. June 1.

Air Quality from Hoop Buildings. 2002. Environmental/Air Quality Committee of National Pork Board. Ames, IA. January 24. *Invited.*

Nursery Ventilation Case Study. 2002. Iowa Veterinary Medicine Association meeting. Ames, IA. February 6. *Invited.*

Hoop Structures for Finishing Swine. 2001. Montana Pork Producers Association. Great Falls, MT. January. *Invited.*

Nursery Ventilation Case Study. 2001. Iowa Pork Congress. Des Moines, IA. January. *Invited.*

Overview of Alternative Swine Finishing Systems. 2000. Pre-conference of the Allen Lemay Swine Conference. Minneapolis, MN. August. *Invited.*

Swine Facility Remodeling. 2000. Nebraska Pork Industry Expo. Columbus Junction, NE. February. *Invited.*

Swine Production Systems. 1999. Workshop to Review the Role of Publicly Funded Agricultural Research on the Structure of US Agriculture. The National Academies, Board on Agriculture and Natural Resources. Madison, WI. November. *Invited.*

Swine Finishing in Hoop Structures as Compared to Totally Enclosed Confinement Facilities: Summary of Progress. 1999. International ASAE Meeting, Toronto, Canada. July.

Managing Hoop Buildings for Gestation. 1999. Iowa Pork Congress. Des Moines, IA. January. *Invited.*

Quality Swine Facility Construction. 1998. Iowa Pork Congress. Des Moines, IA. January. *Invited.*

An Economic Comparison of Three Styles of Swine Finishing Facilities. 1998. International ASAE Annual Meeting. Orlando, FL. July.

Introduction to bedding-based swine production systems. 1998. Sustainable Agriculture Research and Education Program In-Service training. July. *Invited.*

Hoop Structures for Finishing Swine. 1998. Tennessee Pork Congress. Jackson, TN. January. *Invited.*

Thermal Needs of the Early Weaned Pig. 1997. Livestock Environment V, Proceedings of the Fifth International Symposium. Minneapolis, MN. May.

Hoop Structures - Research on Performance and Operation. 1997. OSU Swine Day, Columbus, OH. August. *Invited.*

Structural and Other Considerations in Utilizing Hoops for Swine Production. 1997. Swine Disease Conference. Ames, IA. October. *Invited.*

Evaluation of the Thermal Needs of Early Weaned Pigs. 1996. ASAE Paper 96-4085. International ASAE Meeting, Phoenix, AZ. July.

TEAMPork: An Integrated Approach to Expansion of the Iowa Swine Industry. 1995. ASAE Paper 95-5664. International ASAE Meeting, Chicago, IL. July.

Human Health Concerns in Livestock and Poultry Housing. 1994. National Poultry Waste Management Symposium, Athens, GA. October. *Invited*.

Maintaining Poultry House Environments with Reduced Energy. 1993. South Carolina Engineering Expo. Greenville, SC. November.

Ventilation and Air Quality Concerns in Poultry Housing. 1993. Duke Power Company Ag Engineering Training. Clemson, SC. September. *Invited*.

Winter Ventilation Workshop. 1993. Tyson Foods, Inc. Monroe, NC. April. *Invited*.

A Low Energy Swine Farrowing Facility: A Field Study. 1991. ASAE Paper 91-4028. ASAE Summer Meeting, Albuquerque, NM. June.

A Low Energy Swine Nursery Facility: A Field Study. 1991. ASAE Paper 91-4027. ASAE Summer Meeting, Albuquerque, NM. June.

Winter Ventilation Workshop. 1991. Amick Poultry Farms. Batesburg, SC. January. *Invited*.

Effects of Hurricane Hugo on Agricultural Structures. 1990. ASAE Paper No. 90-4538. ASAE Winter Meeting, Chicago, IL. December.

Rethinking Farm Structures After Hurricane Hugo. 1990. South Carolina Pork Conference. Columbia, SC. February. *Invited*.

Modeling Power interruptions in swine nurseries. 1989. ASAE Paper No 89-4071. ASAE Summer Meeting. Quebec City, Canada. June.

Pressure interactions in slotted inlets. 1985. ASAE Paper No. 85-4515. ASAE Winter Meeting. Chicago, IL. December.

XIV. REVIEW AND EDITING

Papers Reviewed for Publication

Consistently asked to review for ASABE journals

Books Reviewed for Publication

Agricultural Buildings and Structures. A textbook for AST students published by ASAE. Reviewed in 1994.

Grant Reviews

- NPB grant proposals (4): 2019
- NPB grant proposals (5): 2018
- NPB grant proposals (4): 2017
- NPB grant proposals (5): 2016
- NPB grant proposals (4): 2015

- NPB grant proposals (5): 2014
- NPB grant proposals (4): 2013
- NPB grant proposals (6). 2012.
- NPB grant proposals (2) 2011.
- Evaluated NRI grant 2003.
- Evaluated grant proposals (3) for NPB. 2002.
- Evaluated grant proposals (2) for NPPC. 2001.
- Evaluated grant “Emission Estimation Measurement, and Modeling of Ambient Ammonia Concentraions.” for the Center for Health Effects of Environmental Contamination. 2000.
- Evaluated grant proposals (3) for NPPC. 2000.
- Evaluated application for USDA Small Business Innovation Research. 1998.
- Evaluated application for USDA Small Business Innovation Research. “Swine farrowing hut accessible buildable by handicapped.” 1997.
- Evaluated application for USDA Small Business Innovation Research. “Protection of farm animals from heat waves.” 1996.
- Evaluated applications and made recommendation for funding of ASHRAE Research Project #784, "Environmental Quality in Animal Housing Facilities - A Review and Evaluation of Alternative Ventilation Strategies". 1994.
- Evaluated application for USDA Small Business Innovation Research. "Low Cost Alternative for Managing Dairy Farm Waste". 1993.

Editorial Activity

- Domain Editor for the Pork Industry Handbook sponsored by the National Pork Board. 2003-present. Tasks include finding authors, managing progress, conducting reviews.
- Served as the handbook review subcommittee chair for ASHRAE TC 2.2. Assisted in the SI revision of the section on the design of plant facilities, 1995 Applications Handbook Chapter 21, Environmental Control for Animals and Plants. Overall responsibility of finding revisers, coordinating revision, taking committee vote on revisions and making final judgment on revision decisions.

XV. CONSULTING

- Murphy-Brown, LLC
- Hormel
- Murphy Family Ventures
- National Pork Board
- US Grain Council
- Valco