

TERRY A. HOUSER

Department of Animal Science
194 Meat Laboratory
Iowa State University, Ames, IA 50011

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EDUCATION

Iowa State University

Doctor of Philosophy ~ Meat Science: August 2004

“Quality characteristics of irradiated ready-to-eat meats”

Master of Science ~ Meat Science: August 2001

“Effects of irradiation on properties of cured ham”

University of Nebraska-Lincoln

Bachelor of Science ~ Animal Science: December 1998

WORK EXPERIENCE

Iowa State University, Ames, IA

Associate Professor-Extension Meat Specialist, 0.7 Extension, 0.2 Research, and 0.1 Administration FTE, November 2019-Present

Extension program areas include meat processing, food safety, and animal handling. Research responsibilities include conducting research to enhance the value of fresh and further processed meat products. Professor in charge of the ISU Meat Laboratory facility and staff.

Kansas State University, Manhattan, KS

Associate Professor-Extension Meat Specialist, 0.5 Extension, 0.4 Research, 0.1 Teaching FTE July 2017-October 2019

Associate Professor, 0.5 Research and 0.5 Teaching FTE, June 2013-July 2017

Assistant Professor, 0.5 Research and 0.5 Teaching FTE, January 2007-June 2013

Extension program areas included animal handling, meat processing, and carcass quality/value.

Teaching responsibilities included ASI 315, Livestock and Meat Evaluation, ASI 361, Meat Animal Processing, ASI 370, Principles of Meat Evaluation, ASI 495, Advanced Meat Evaluation, ASI 610 Processed Meat Operations, ASI 777, Meat Technology, and ASI 930 Advanced Meat Science.

Research responsibilities included conducting research to enhance the value of fresh and further processed meat products. Management and coaching responsibilities included oversight of the KSU Meat Laboratory from 2012-2019 and KSU Intercollegiate Meats Judging Program from 2007-2017.

University of Florida, Gainesville, FL

*Assistant Professor-Extension Meats Specialist, 0.7 Extension and 0.3 Teaching FTE
August 2004-December 2006*

Extension activities were focused on food safety and processing with an emphasis on the red meat sector. Teaching responsibilities included ANS 2002, a service course for consumers, ALS 4932/ANS 6932, a course on food safety (HACCP), and ANS 4992, meats judging.

Iowa State University, Ames, IA

*Graduate Research Assistant/Teaching Assistant
January 1999 –August 2004*

Research responsibilities included working with irradiation processing, non-meat ingredient functionality, and pork carcass defects. Teaching responsibilities included developing teaching programs and instructing undergraduate students in the area of meat animal evaluation and animal products.

Wimmer's Meat Products, West Point, NE

Summer Internship 1998

Developed, managed, wrote, and implemented record keeping systems for HACCP. Participated in the decision making process regarding HACCP plan development. Assisted quality assurance personnel performing finished product audits, as well as pre-operational inspections.

Fred Usinger Incorporated, Milwaukee, WI

Summer Internship 1997

Responsibilities included managing the cooking of specialty products and the post-cooking sanitation of equipment. Assisted in the formulation of raw ingredients prior to processing. Assisted casing personnel in the inspection, cleaning, and measuring of natural casings prior to stuffing.

University of Nebraska-Lincoln Loeffel Meat Laboratory, Lincoln, NE

*Animal Science Department, Student Labor 15-20 hours/week
October 1995-December 1998*

Assisted in the slaughter, fabrication, and processing of beef, pork, lamb, chicken, and ostrich. General sanitation, meat wrapping, vacuum packaging, and meat sales were other major tasks performed.

IOWA STATE UNIVERSITY ACTIVITIES

Extension Programs:

Basic HACCP Training for Meat and Poultry Processors, Ames IA

- Fall 2020 n=45

USDA Food Safety Summit, Ames IA

- Fall 2020 n=131

Iowa Cattlemen's Young Leadership Program, Grading and Fabrication

- Fall 2020 n=20

Iowa State Sausage and Processed Meats Short Course Programs

- Cured Meats, Spring 2020 n=29
- Basic Sausage, Fall 2019

Smithfield Foods Meat and Poultry Training

- Brown Belt Training, Level 3, Spring 2020 n=42
- Maintenance and Engineering, Spring 2020 n=13
- Black Belt, Summer 2020 n=23

Iowa Meat Processors Association Training Seminar, Ames, IA

- Spring 2020 n=47

Extension Activities:

Iowa Meat Processors Association Convention

- Convention planning 2019-present

Processed Meat Evaluation

- American Association of Meat Processors
 - Co-technical advisor for the American Cured Meat Championships 2019-Present

ALL PEER-REVIEWED PUBLICATIONS

- Van Bibber-Krueger, C.L., A.M. Collins, K.J. Phelps, T.G. O'Quinn, **T.A. Houser**, K.K. Turner, and J.M. Gonzalez†. 2020. Effects of quality grade and intramuscular location on beef semitendinosus muscle fiber characteristics, NADH content, and color stability. *J. Anim. Sci.* 98:1-11. doi:10.1093/jas/skaa078
- Phelps, K.J., J.S. Drouillard, T.G. O'Quinn, **T.A. Houser**, and J.M. Gonzalez. 2020. Effects of supplementing DHA-rich microalgae and antioxidants on meat color stability and sensory characteristics. *Trans. Anim. Sci.* 4:1-13. doi:10.1093/tas/txaa135
- Linghu, Z., F. Karim, M. Taghvaei, Z. Albashabsheh, **T.A. Houser**, and J.S. Smith. 2020. Amino acids effects on heterocyclic amines formation and physicochemical properties in pan-fried beef patties. *J. Food Sci* Vol. 85 (4), 1361-1370. Doi:10.1111/1750-3841.15078
- Gonzalez, J.M., **T.A. Houser**, T.G. O'Quinn, D.E. Nuttleman, R. Odgaard, J.M. Coulter, G. Faltys, A.M. Stezleni, and M.J. Azin. 2020. The effects of the LIPEX finishing diet regimen on pork quality, fatty acid profile, palatability, and color stability. *Trans. Anim. Sci.* Vol 4 (1), 339-351. doi:10.1093/tas/txz149
- Najar-Villarreal, F., E.A.E. Boyle, R.D. Danler, T.G. O'Quinn, **T.A. Houser**, and J.M. Gonzalez. 2019. Fatty acid composition, proximate analysis, and consumer sensory evaluation of United States grass-fed ground beef. *Meat Muscle Bio.* 3:389-398. doi:10.22175/mmb2019.06.0018

- Hobson, A., J.M. Gonzalez, T. O'Quinn, E.A. Boyle, J.S. Smith, F.A. Karim, C.I. Vahl, R. Johnson, and **T.A. Houser**. 2019. Smoked sugar improves flavor stability of frozen sliced food service bacon. *Meat Muscle Bio.* 3:356-366. doi: 10.22175/mmb2019.06.0020
- Magossi, G., N. Cernicchiaro, S. Dritz, **T. Houser**, J. Woodworth, C. Jones, and V. Trinetta. 2019. Evaluation of *Salmonella* presence in selected United States feed mills. *Microbiology Open* 8:e711. doi:10.1002/mbo3.711
- Drey, L.N., L.L. Prill, B.A. Olson, E.A. Rice, J.M. Gonzalez, J.L. Vipham, **T.A. Houser**, A.E. Boyle, and T.G. O'Quinn. 2019. Evaluation of marbling and enhancement's abilities to compensate for reduced beef palatability at elevated degrees of doneness. *J. Anim. Sci.* 97:669-686. doi:10.1093/jas/sky435
- Vierck, K.R., T.G. O'Quinn, J.A. Noel, T.A. Houser, E.A.E. Boyle, and J.M. Gonzalez. 2018. Effects of marbling texture on muscle fiber and collagen characteristics. *Meat Muscle Bio.* 2:75-82. doi:10.22175/mmb2017.10.0054
- McKillip, K.V., A.K. Wilfong, J.M. Gonzalez, **T. Houser**, J.A. Unruh, E.A.E. Boyle, and T.G. O'Quinn. 2017. Sensory evaluation of enhanced beef strip loin steaks cooked to three degrees of doneness. *Meat Muscle Bio.* 1:227-241. doi:10.22175/mmb2017.06.0033
- McKillip, K.V., A.K. Wilfong, J.M. Gonzalez, **T. Houser**, J.A. Unruh, E.A.E. Boyle, and T.G. O'Quinn. 2017. Repeatability and accuracy of the pressed juice percentage method at sorting steaks into juiciness categories. *Meat Muscle Bio.* 1:242-252. doi:10.22175/mmb2017.07.0034
- Wilfong, A.K., McKillip, K.V., Gonzalez, J.M., **Houser, T.A.**, Unruh, J.A., Boyle, E.A.E, and O'Quinn, T.G. 2016. The effect of branding on consumer palatability ratings of beef strip loin steaks. *J. Anim. Sci.* 94:4930-4942
- Wilfong, A.K., McKillip, K.V., Gonzalez, J.M., **Houser, T.A.**, Unruh, J.A., Boyle, E.A.E, and O'Quinn, T.G. 2016. Determination of the effect of brand and product identification on consumer palatability ratings of ground beef patties. *J. Anim. Sci.* 94:4943-4958
- Sevart, N.J. Baumann, N., Thippareddi, H., **Houser, T.A.**, Luchansky, J.B., Porto-Fett, A.C.S., Marx, D.B., Acuff, G.R., Phebus, R.K. 2016. Evaluating the efficacy of three U.S. Department of Agriculture-approved antimicrobial sprays for reducing shiga toxin-producing *Escherichia coli* surrogate populations on bob veal carcasses. *J. Food Prot.* 79:956-962
- Phelps, K.J., Drouillard, J.S., Jennings, J.S., Depenbusch, B.E., Vaughn, M.A., Burnett, D.D., Ebarb, S.M., Dietz, G.J., Heitschmidt, J.D., Noel, J.A., **Houser, T.A.**, Gonzalez, J.M. 2015. Effects of the Programmed Nutrition Beef Program on moisture retention of cooked ground beef patties and enhanced strip loins. *Meat Sci.* 100:189-194
- Sotak, K.M., **Houser, T.A.**, Goodband, R.D., Tokach, M.D., Dritz, S.S., DeRouchey, J.M., Goehring, B.L., Skaar, G.R., and Nelssen, J.L. 2015. The effects of feeding sorghum dried distillers grains with solubles on finishing pig growth performance, carcass characteristics, and fat quality. *J. Anim. Sci.* 93:2904-2915

- Paulk, C.B., Tokach, M.D., Nelssen J.L., Burnett, D.D., Vaughn, M.A., Phelps, K.J., Dritz, S.S., DeRouchey, J.M., Goodband, R.D., **Houser, T.A.**, Haydon, K.D., Gonzalez J.M. 2014. Effect of dietary zinc level and Ractopamine-HCl on pork chop tenderness and shelf life characteristics. *J. Anim. Sci.* 92:2325-2335
- Phelps, K.J., Drouillard, J.S., Jennings, J.S., Van Bibber-Krueger, C.L., Miller, K.A., Vaughn, M.A., Burnett, D.D., Ebarb, S.M., **Houser, T.A.**, Johnson, S.E., Gonzalez, J.M. 2014. Effects of the Programmed Nutrition Beef Program on meat quality characteristics. *J. Anim. Sci.* 92:1781-1792
- Garner, C.M., Unruh, J.A., Hunt, M.C., Boyle, E.A.E., Houser, T.A. 2014. Effects of subprimal type, quality grade, and aging time on display color of ground beef patties. *Meat Sci.* 98:301-309
- Vangnai, K., **Houser, T.A.**, Hunt, M.C., Smith, J.S. 2014. Effect of enhancement on the formation of heterocyclic amines in cooked pork loins: preliminary studies. *Meat Sci.* 98:88-93
- Asmus, M.D., DeRouchey, J.M., Tokach, M.D., Dritz, S.S., **Houser T.A.**, Nelseen, J.L., Goodband. R.D. 2014. Effects of lowering dietary fiber before marketing on finishing pig growth performance, carcass characteristics, carcass fat quality, and intestinal weights. *J. Anim. Sci.* 92:119-128
- Ying, W., Tokach, M.D., DeRouchey, J.M., **Houser T.A.**, Dritz S.S., Goodband R.D., Nelssen J. 2013. Effects of dietary L-carnitine and dried distillers grains with solubles on growth, carcass characteristics, and loin and fat quality of growing-finishing pigs. *J. Anim. Sci.* 91:3211-3219
- Weber M.J., Dikeman M.E., Jaeger J.R., Unruh J.A., Murray L., and **Houser T.A.** 2013. Effects of feeding a single or sequence of beta-adrenergic agonists on cull cow meat quality. *Meat Sci.* 93:275-281
- Gerlach B.M., **Houser T.A.**, Hollis L.C., Tokach M.D., Nietfeld J.C., Higgins J.J., Anderson G.A., and Goehring B.L. 2012. Incidence and severity of *Arcanobacterium pyogenes* injection site abscesses with needle or needle-free injection. *Meat Sci.* 92:805-807
- Weber M.J., Dikeman M.E., Unruh J.A., Jaeger J.R., Murray L., **Houser T.A.**, and Johnson B.J. 2012. Effects of sequential feeding of β -adrenergic agonists on cull cow performance, carcass characteristics, and mRNA relative abundance. *J. Anim. Sci.* 90:1628-1637
- Dutlinger A.J., DeRouchey J.M., Tokach M.D., Dritz S.S., Goodband R.D., Nelssen J.L., **Houser T.A.** and Sulabo R.C. 2012. Effects of increasing crude glycerol and dried distillers grains with solubles on growth performance, carcass characteristics, and carcass fat quality of finishing pigs. *J. Anim. Sci.* 90:840-852
- Puangsoombat K., Gadgil P, **Houser T.A.**, Hunt M.C., and Smith J.S. 2012. Occurrence of heterocyclic amines in cooked meat products. *Meat Sci.* 90:739-746
- Puangsoombat K., Gadgil P., **Houser T.A.**, Hunt M.C., and Smith J.S. 2011. Heterocyclic amine content in commercial ready to eat meat products. *Meat Sci.* 88:227-233
- Crow B.A., Dikeman M.E., Hollis L.C., Phebus R.A., Ray A.N., **Houser T.A.**, and Grobbel J.P. 2010. A

comparison of needle-free and needle-injection methods and solutions for enhancement of beef *longissimus lumborum* muscles. *Meat Sci.* 84:529-537

- Mohan A., Hunt M.C., Barstow T.J., **Houser T.A.**, and Hueber D.M. 2010. Near-infrared oximetry of three post-rigor skeletal muscles for following myoglobin redox forms. *Food Chem.* 123:456-464
- Mohan A., Muthukrishnan S., Hunt M.C., Barstow T.J., and **Houser T.A.** 2010. Kinetics of myoglobin redox form stabilization by malate dehydrogenase. *J. of Agric. Food Chem.* 58:6994-7000
- Mohan A., Hunt M.C., Muthukrishnan S., Barstow T.J., and **Houser T.A.** 2010. Myoglobin redox form stabilization by compartmentalized lactate and malate dehydrogenases. *J. of Agric. Food Chem.* 58:7021-7029
- Mohan A., Hunt M.C., Barstow T.J., **Houser T.A.**, Muthukrishnan S. 2010. Effects of malate, lactate and pyruvate on myoglobin redox stability in homogenates of three bovine muscles. *Meat Sci.* 86:304-310
- Mohan A., Hunt M.C., Barstow T.J., **Houser T.A.**, Bopp C., and Hueber D.M. 2010. Effects of fibre orientation, myoglobin redox form, and postmortem storage on NIR tissue oximeter measurements of beef longissimus muscle. *Meat Sci.* 84:79-85
- Gunderson, J.A., Hunt M.C., **Houser T.A.**, Boyle E.A., Dikeman M.E., Johnson D.E., VanOverbeke D.L., Hilton G.G., Brooks C., Killefer J., Allen D.M., Streeter M.N., Nichols W.T., Hutcheson J.P., and Yates D.A. 2009. Effects of zilpaterol hydrochloride feeding duration on crossbred beef semimembranosus steak color in aerobic or modified atmosphere packaging. *J. Anim. Sci.* 87:3739-3750
- Gunderson, J.A., Hunt M.C., **Houser T.A.**, Boyle E.A., Dikeman M.E., Johnson D.E., VanOverbeke D.L., Hilton G.G., Brooks C., Killefer J., Allen D.M., Streeter M.N., Nichols W.T., Hutcheson J.P., and Yates D.A. 2009. Feeding zilpaterol hydrochloride to calf-fed Holsteins has minimal effects on semimembranosus steak color. *J. Anim. Sci.* 87:3751-3763
- Houser T.A.**, Sebranek J.G., Núñez Maisonet W., Cordray J.C., Ahn D.U., and Dixon P.M. 2005. Irradiation-induced cured ham color fading and regeneration. *J. Food Sci.* 70:281-285
- Houser T.A.**, Sebranek J.G., Núñez Maisonet W., Cordray J.C., Wiegand B.R., Ahn D.U., and Lee E.J. 2005. The effects of irradiation on quality characteristics of commercially produced ham and pork frankfurters over extended storage. *J. Food Sci.* 70:262-266
- Sebranek J.G., Sewalt V.J.H., Robbins K.L., and **Houser T.A.** 2004. Comparison of a natural rosemary extract and BHA/BHT for relative antioxidant effectiveness in pork sausage. *Meat Sci.* 69:289-296
- Houser T.A.**, Sebranek J.G., Thacker B.J., Baas T.J., Nilubol D. Thacker E.L., and Kruse 2004. Effectiveness of transdermal, needle-free injections for reducing pork carcass defects. *Meat Sci.* 68:329-332
- Houser T.A.**, Sebranek J.G., and Lonergan S.M. 2003. Effects of irradiation on properties of cured ham. *J. Food Sci.* 68:2362-2365

PROFESSIONAL SERVICE

- American Meat Science Association, Member, 1999-Present
 - Pork 101 Committee Member, 2008-2015
 - Membership Transition Committee 2006-2008
 - Intercollegiate Meat Coaches Association 2005-2017
 - Past President, 2017-2018
 - President, 2016-2017
 - President-Elect, 2015-2016
 - Past President, 2009-2010
 - President, 2008-2009
 - President-Elect, 2007-2008
 - Southeast Region Director 2006-2008
 - AMSA Processed Meats Contest Committee and Official, RMC 2016 and 2017
 - Processed Meats Clinic Planning Committee, 2003-2007
 - Distinguished Research Award Committee member, 2001-2004
 - Student Board of Directors Representative- Midwest Region, 2002-2003
 - Intercollegiate Meat Judging Contest Official
 - Iowa State Invitational, Committee Chairman, Spring 2019
 - National Barrow Show Contest, Committee Chairman, Fall 2016
 - Southeastern Meat Judging Contest, Committee Chairman, Spring 2016
 - National Barrow Show Contest, Committee Chairman, Fall 2015
 - Beef Empire Days Meat Judging Contest Chairman, Fall 2007 and 2008
 - Southeastern Meat Judging Contest, Spring 2007
- American Society of Animal Science Member: 2007-2015
 - Midwest Animal Science Meat Science and Muscle Biology Committee
 - Chair for 2009-2010
- American Association of Meat Processors, Member, 2004-Present
 - Co-Technical Director for the American Cured Meat Championships, 2016-present
 - Judged the American Cured Meat Championships in Kansas City, Missouri, 2011
 - Judged the American Cured Meat Championships in Omaha, Nebraska, 2009
 - Education Committee Member, 2008-Present
- Institute of Food Technologists, Member, Muscle Foods Division, 2000-2008
 - Member at Large, 2006-2007
- American Hereford Association Member, 2010-present
- American Angus Association Member, 2012-present

HONORS AND AWARDS

- Coach of the K-State Meats Judging Team, Reserve National Champion Team: 2017
- Coach of the K-State Meats Judging Team, National Barrow Show Champion Team: 2017
- Coach of the K-State Meats Judging Team, Southeastern Meats Judging Contest Champion Team: 2017
- Kansas State University “Professor of the Week” Award from the KSU Presidents Office, Fall 2016
- Kansas State University College of Agriculture “Faculty of the Semester” Award 2016
- Coach of the K-State Meats Judging Team, National Barrow Show Graduate Champion Team: 2016
- Coach of the K-State Meats Judging Team, Iowa State Invitational Champion Team: 2016
- Kansas State University Mortar Board College of Agriculture, Faculty of the Year Award: 2015
- Coach of the K-State Meats Judging Team, National Barrow Show Champion Team: 2015
- Kansas FFA Association “Honorary State FFA Degree”: 2015
- Kansas State University College of Agriculture “Advisor of the Year” Award: 2014
- American Meat Science Association “Distinguished Achievement” Award: 2013
- Coach of the K-State Meats Judging Team, Australian National Meats Judging Contest Champions: 2013
- Coach of the K-State Meats Judging Team, International Reserve National Champion Team: 2012
- Coach of the K-State Meats Judging Team, High Plains Champion Team: 2011
- Coach of the K-State Meats Judging Team, Iowa State Invitational Champion Team: 2010
- Recipient of the 2003 David and Jacqueline Topel Scholarship in Meat Science
- Recipient of the Iowa State University Graduate Teaching Excellence Award, Fall 2002
- 2002 AMSA Graduate Student Poster Competition- 3rd place Masters Division
- Recipient of the 2002 David and Jacqueline Topel Scholarship in Meat Science
- Recipient of an Iowa Farm Bureau Federation 2001 Graduate Student Fellowship
- Recipient of an Iowa Farm Bureau Federation 2000 Graduate Student Fellowship
- Dean’s List, University of Nebraska College of Agriculture and Natural Resources
 - Fall Semester, 1997 and 1998, Spring Semester, 1997 and 1998
- 1995 American FFA Degree recipient

KANSAS STATE UNIVERSITY ACTIVITIES

Extension Activities:

Outreach Activities associated with the Kansas Meat Processors Association (KMPA)
Co-Technical Advisor for Kansas State Cured Meats Competition, 2017-2019
Technical Advisor for Annual Convention planning, 2017-2019
Midwest Meat Processing Short Course planning, 2017-2019

Outreach Presentations delivered to Small and Very Small Meat Processors:

- Presentation, “Maintaining High Quality Bacon During Frozen Storage,” Spring 2019, Kansas Association of Meat Processors Annual Convention, Manhattan, Kansas
- Presentation, “Processed Meat Evaluation,” Spring 2019, Kansas Association of Meat Processors Annual Convention, Manhattan, Kansas
- Presentation, “Beef Quality Grading,” Spring 2019, Midwest Meat Processing Workshop, Manhattan, Kansas
- Presentation, “Using Antioxidants in Fresh Bratwurst,” Spring 2019, Midwest Meat Processing Workshop, Manhattan, Kansas
- Presentation, “Developing a Robust Animal Handling Plan for Your Establishment,” Spring 2019, USDA Food Safety Inspection Service Update, Des Moines District Meetings, Ames, IA
- Presentation, “Developing a Robust Animal Handling Plan for Your Establishment,” Spring 2019, Iowa Association of Meat Processors Annual Convention, Ames, IA
- Presentation, “Improving Stunning Effectiveness for Small Meat Processors,” Spring 2018, Kansas Association of Meat Processors Annual Convention, Manhattan, Kansas
- Presentation, “Surviving a Humane Handling Violation/Audit,” Spring 2018, Nebraska Association of Meat Processors Annual Convention, Kearney, Nebraska
- ¾ day Workshop, Humane Handling for Small Meat Processors, Spring 2018, Missouri Meat Processors Association Annual Convention, Branson, Missouri
- Presentation, “Surviving a Humane Handling Violation/Audit,” Summer 2016, American Association of Meat Processors Annual Convention, Omaha, Nebraska
- Presentation, “Surviving a Humane Handling Violation/Audit,” Spring 2016, Kansas Meat Processors Annual Convention, Manhattan, Kansas
- Presentation “Factors influencing belly quality and cooked bacon characteristics,” Spring 2016, Wisconsin Association of Meat Processors Annual Convention, Madison, Wisconsin
- “Surviving a Humane Handling Violation/Audit,” Spring 2016, Wisconsin Association of Meat Processors Annual Convention, Madison, Wisconsin
- “Facility and Equipment Design Considerations,” Spring 2016, Wisconsin Association of Meat Processors Annual Convention, Pre-convention workshop, Madison, Wisconsin
- “Listeria prevention in your plant and your product,” Fall 2015, Walton’s Inc. Processing Short Course, Wichita, Kansas
- “Surviving a Humane Handling Violation/Audit,” Fall 2015, Walton’s Inc. Processing Short Course, Wichita, Kansas
- “Getting the Most out of a Goat,” Spring 2012, Midwest Meat Processing Workshop, Manhattan, Kansas
- “Composting, The New Smell of Money,” Spring 2011, Midwest Meat Processing Workshop, Manhattan, Kansas
- “Accelerated Processing,” Spring 2008, Midwest Meat Processing Workshop, Manhattan, Kansas
- “Cured Meat Evaluation,” Spring 2008, Midwest Meat Processing Workshop, Manhattan, Kansas
- “The Basics of Smoking,” Spring 2008, Nebraska Association of Meat Processors Annual Convention, Kearney, Nebraska

- “Oxidation Effects on Meat Color and Flavor,” Spring 2007, Midwest Meat Processing Workshop, Manhattan, Kansas

K-State Mexican Meat Processing Short Course, Summer 2016, 2017, 2018, and 2019

Presenter/meat lab coordinator

- Beef carcass fabrication demonstration
- Pork carcass fabrication demonstration
- Enhancement and marination presentation
- Restructuring principles presentation
- Evaluating meat products presentation
- Proximate composition presentation
- Group project leader

Processed Meat Evaluation

- Kansas Meat Processors Association
 - Cured meat competition official, 2007-2019
- American Association of Meat Processors
 - Co-Technical Advisor for the American Cured Meat Championships
 - Mobile, Alabama, 2019
 - Kansas City, Missouri, 2018
 - Louisville, Kentucky, 2017
 - Omaha, Nebraska, 2016
 - Cured meat judging official, 2009 and 2011
- Missouri Meat Processors Association
 - Cured meat competition official, 2018
- Iowa Meat Processors Association
 - Cured meat competition official, 2016, 2017, 2018 and 2019
- Nebraska Association of Meat Processors
 - Cured meat competition official, 2008 and 2018
- Wisconsin Association of Meat Processors
 - Cured meat competition official, 2016

Carcass Evaluation

- Beef Quality and Yield Grading, Agent Training, Manhattan, KS, 2018
- Carcass Data Analysis, Decatur Co. 2018
- Beef Carcass Evaluation and Grading, Rawlins Co. 2018
- Beef Carcass Evaluation and Grading, Pottawattamie Co. 2017
- Carcass Data Collection, Mitchell Co. 2017
- Carcass Data Collection, Ellsworth Co. 2017
- Carcass Data Collection, Lincoln Co. 2017
- Beef Empire Days Beef Carcass Official 2013-2015

K-State Cattlemen’s Day

- “Beef Quality Grading: Recent Revisions and Relevance to Valuation of Beef,” Presentation 2019

- “Feeding Cull Cows for Profit” Presentation, 2018
 - “Where’s the Beef,” Poster, 2018
 - “Maximizing the Value of Cull Cows,” Poster, 2018
- “Factors Influencing Beef Quality” Presentation, 2011
- “Maximizing Value of Cull Beef Cows” Presentation, 2010
- “Value Added Beef Processing Technologies” Presentation, 2008

K-State Pet Food Experience, Coordinator, Meat Processing Presentations/Demonstrations 2016

4-H activities:

- Co-coordinated and officiated the National 4-H Meat Judging contest, 2007-2013
- Co-coordinated the 2007-2016 State 4-H Meat Judging contests
- Junior Beef Day Presentation,
 - “Where’s the Beef,” cuts and appropriate finish 2018
 - “Beef Grading,” 2013
 - “Grading of Beef Animals,” 2012
 - “Beef, Quality and Yield Grading,” 2010
 - “Beef Carcass Evaluation,” 2007
- Junior Meat Goat Day
 - “Meat Goat Fabrication and Cookery,” 2019
- Junior Sheep Day Presentation,
 - “Lamb Meat Cuts and Cookery,” 2018
- Junior Swine Day Presentation,
 - “Know Your Pork,” 2019
 - “Pork Grading and Carcass Defects,” 2011
- Dr. Bob Hines Swine Classic Presentation
 - “Pork Grading,” Summer 2011
 - “Pork Quality,” Summer 2008
- 4-H Discovery Days Presentations
 - “Preparing for the State 4-H Meat Judging Contest,” Summer 2009
 - “Teaching Meat Judging Concepts to 4-H’ers,” Summer 2009
 - “Everything But the Squeal,” Summer 2007 and 2008
 - “Not All Steak Is Created Equal,” Summer 2007 and 2008

FFA activities:

- FFA Midwinter Conference “Teaching Meat Judging” Presentation, 2018
- Co-coordinated the 2007-2017 State CDE Meats Contest
- FFA Summer Conference Meat Judging Presentation, 2016
- FFA Midwinter conference Meat Judging Presentation, 2010
- Judge for the State Extemporaneous Public Speaking Contest in 2009 and 2010

Other activities:

Cass County Iowa Beef Producers Tour, Manhattan, KS

- Impacts of Beta Agonists on Carcass Composition and Palatability/Meat Quality Traits, 2013

Kansas Beef Council Young Stockmen's Academy

- Merck Presentation, 2012

Nebraska Pork 101 Short Course: Spring 2009 and Spring 2010

- Invited Presentation "Meat Curing Ingredients"
- Invited Presentation "Processed Meat Manufacturing"
- Group leader for pork carcass fabrication, ham manufacturing, and sausage manufacturing activities

Iowa State University Sausage and Processed Meats Short Course:

- Group Leader for short course project on particle size reduction in smoked sausages, Summer 2008

Nebraska Beef 706 Short Course: Spring 2007

- Invited Presentation "Beef Carcass Evaluation"
- Group leader for beef carcass fabrication activity

UNIVERSITY OF FLORIDA ACTIVITIES

Extension Programs:

- Food Service Beef Seminars in cooperation with the Florida Beef Council
 - Sysco Food Service, Gainesville, FL, May 22, 2006
 - Sysco Food Service, Orlando, FL, January 23, 2006
 - Sysco Food Service, Kissimmee, FL, October 31, 2005
 - Cheney Bros. Kissimmee, FL, October 21, 2005
 - U.S. Food Service, Jacksonville, FL, September 16, 2005
 - Sysco Food Service, Ocoee, FL, July 11, 2005
 - Grand Western Meats, Gainesville, FL, April 18, 2005
 - Sysco Food Service, Gainesville, FL, March 14, 2005
 - U.S. Food Service, Kissimmee, FL, February 25, 2005
 - Sysco Food Service, Miami, FL, November 19, 2004
 - U.S. Food Service, Clearwater, FL, November 5, 2004
 - Great Western Meats, Kissimmee, FL, October 15, 2004
 - Sysco Food Service, Ocoee, FL, September 22, 2004
- Basic HACCP Training for Meat and Poultry Processors
 - Kissimmee, FL, July 13-14, 2006
 - Daytona Beach, FL, December 7-9, 2005
 - Broward County Extension, Davie, FL, August 17-19, 2005
 - Florida Beef Council, Kissimmee, FL, April 26-27, 2005
 - University of Florida, Gainesville, FL, November 11-12, 2004

- Annual Beef Cattle Short Course
-Planning Committee, 2004-2006
-“Natural-Organic-Grass fed Beef Cattle Definitions and Regulations”, May 4, 2006

Extension Activities:

- Publix Supermarkets, Invited Presentation, The New Face of Beef, Natural, Organic, and Branded Beef, Lakeland, FL, June 29, 2006 and March 29, 2006
- Extension In-Service Training, Gainesville, FL, June 2, 2005
-Presentation on BSE and Natural and Organic Beef Products
- State 4-H Convention Program
-Presentation on Food Safety in the Meat Industry
- State 4-H and FFA Meats Judging Contest, Gainesville, FL, 2005
-Planning Committee
- State 4-H Hog and Ham Project, Gainesville, FL, 2005
-Presentation on Processed Meats and Non-meat Ingredients
- State 4-H Horse Show, Tampa, FL, 2005 and 2006
- State 4-H and FFA Livestock Judging Contest, Gainesville, FL, 2005 and 2006
-Official for pork placing and reasons classes