

JOE D. LUCK, PH.D., P.E.

Assistant Professor/Precision Agriculture Engineer
Department of Biological Systems Engineering
University of Nebraska-Lincoln
206 L.W. Chase Hall, East Campus
Lincoln, NE 68583-0726
Phone: (402) 472-1488
Fax: (402) 472-6338
Email: jluck2@unl.edu

EDUCATION

- Ph.D. Biosystems and Agricultural Engineering, University of Kentucky, 2012
- M.S. Biosystems and Agricultural Engineering, University of Kentucky, 2007
- B.S. Civil Engineering, University of Kentucky, Magna Cum Laude, 2002

PROFESSIONAL EXPERIENCE

- 3/12 – Present** **Assistant Professor/Precision Agriculture Engineer**, Department of Biological Systems Engineering, University of Nebraska-Lincoln.
- 1/08 – 3/12** **Engineer Associate/Graduate Student**, Department of Biosystems and Agricultural Engineering, University of Kentucky. Dissertation title: Development of a Variable-Orifice Spray Nozzle with High Pressure Chemical Injection for Improved Pesticide Efficacy. Advisor: Scott A. Shearer.
- 2/07 – 12/07** **Project Engineer**, Florence & Hutcheson Consulting Engineers, Inc.
- 8/05 – 1/07** **Graduate Research Assistant**, Department of Biosystems and Agricultural Engineering, University of Kentucky. Thesis title: Effects of Pervious Concrete on Potential Environmental Impacts from Animal Production Facilities. Advisor: Stephen R. Workman.

PROFESSIONAL AND HONORARY SOCIETIES

- American Society of Agricultural and Biological Engineers
- International Society of Precision Agriculture
- Gamma Sigma Delta Honor Society of Agriculture
- Alpha Epsilon Agricultural Engineering Honor Society
- Chi Epsilon Civil Engineering Honor Society

PROFESSIONAL LICENSURE AND CERTIFICATION

- Professional Engineer, Commonwealth of Kentucky, April, 2007, License No. 25,342.

HONORS AND AWARDS

- International Society for Precision Agriculture (ISPA) Precision Agriculture Outstanding Graduate Student Award, 2010
- Portland Cement Association (PCA) Education Foundation Fellowship, 2006-2007

RESEARCH ACTIVITIES

Refereed Journal Articles

- Purswell, J.L., W.C. Adams, J.D. Luck, B.D. Luck, C.S. Ryals, J.D. Davis, J.K. Ward, and M.D. Montross. Incident solar radiation on poultry house roofs in the continental United States. *App. Eng. Agric.* (in press).
- Sharda, A., J.D. Luck, J.P. Fulton, T.P. McDonald, and S.A. Shearer. 2012. Field application uniformity and accuracy of two rate control systems with automatic section capabilities on agricultural sprayers. *Precision Agric.* DOI: 10.1007/s11119-012-9296-z.
- Sharda, A., J.D. Luck, J.P. Fulton, T.P. McDonald, S.A. Shearer, and D.K. Mullenix. 2012. Comparison of 2-way versus metered 3-way boom shut-off valves for automatic section control on agricultural sprayers. *App. Eng. Agric.* 28(5): 725-733.
- Luck, J.D., S.A. Shearer, B.D. Luck, and F.A. Payne. 2012. Evaluation of a Rhodamine-WT dye/glycerin mixture as a tracer for testing direct injection systems on agricultural sprayers. *App. Eng. Agric.* 28(5): 643-646.
- Luck, J.D., R.S. Zandonadi, and S.A. Shearer. 2011. A case study to evaluate field shape factors for estimating overlap errors with manual and automatic section control. *Trans. ASABE* 54(4): 1237-1243.
- Luck, J.D., S.K. Pitla, R.S. Zandonadi, M.P. Sama, and S.A. Shearer. 2011. Estimating off-rate pesticide application errors resulting from agricultural sprayer turning movements. *Precision Agric.* 12(4): 534-545.
- Luck, J.D., A. Sharda, S.K. Pitla, J.P. Fulton, and S.A. Shearer. 2011. A case study concerning the effects of controller response and turning movements on application rate uniformity with a self-propelled sprayer. *Trans. ASABE* 54(2): 423-431.
- Zandonadi, R.S., J.D. Luck, T.S. Stombaugh, M.P. Sama, and S.A. Shearer. 2011. A computational tool for estimating off-target application areas in agricultural fields. *Trans. ASABE* 54(1): 41-49.
- Luck, J.D., T.G. Mueller, S.A. Shearer, and A.C. Pike. 2010. Grassed waterway planning model evaluated for agricultural fields in the Western Kentucky Coal Field physiographic region of Kentucky. *J. Soil Water Conserv.* 65(5): 280-288.
- Luck, J.D., R.S. Zandonadi, B.D. Luck, and S.A. Shearer. 2010. Reducing pesticide over-application with map-based automatic boom section control on agricultural sprayers. *Trans. ASABE* 53(3): 685-690.
- Pike, A.C., T.G. Mueller, A. Schörgendorfer, J.D. Luck, S.A. Shearer, and A.D. Karathanasis. 2010. Locating eroded waterways with United States Geological Survey elevation data. *Agron. J.* 102(4): 1269-1273.
- Luck, J.D., S.K. Pitla, S.A. Shearer, T.G. Mueller, C.R. Dillon, J.P. Fulton, and S.F. Higgins. 2010. Potential for pesticide and nutrient savings via map-based automatic boom section control of spray nozzles. *Computers Electronics Agric.* 70(1): 19-26.
- Luck, J.D., S.R. Workman, M.S. Coyne, and S.F. Higgins. 2009. Consequences of manure filtration through pervious concrete during simulated rainfall events. *Biosystems Eng.* 102(4): 417-423.
- Luck, J.D., S.R. Workman, M.S. Coyne, and S.F. Higgins. 2008. Solid material retention and nutrient reduction properties of pervious concrete mixtures. *Biosystems Eng.* 100(3): 401-408.
- Luck, J.D., S.R. Workman, S.F. Higgins, and M.S. Coyne. 2006. Hydrologic properties of pervious concrete. *Trans. ASABE* 49(6): 1807-1813.

Invited Book Chapters

- Dillon, C.R., J.M. Shockley, and J.D. Luck. 2013. A Spatial Economics Decision-making Guide for Conservation Reserve Program Enrollment, In *GIS Applications in Agriculture, Vol. 4: Conservation Planning*, T.G. Mueller, G.F. Sassenrath, and S.A. Shearer, Taylor & Francis Group. (in review).

Conference Proceedings

- Luck, J.D., M.P. Sama, and S.A. Shearer. 2012. Spray pattern and droplet spectra characteristics from an actively controlled variable-orifice nozzle. Paper No. 1208 in Proc. of the 11th International Conference on Precision Agriculture, July 16-18, Indianapolis, IN.
- Sharda, A., J.D. Luck, J.P. Fulton, T.P. McDonald, S.A. Shearer, and D.K. Mullenix. 2011. Effect of agricultural sprayer flow control hardware on nozzle response. Paper No. 1111791 in Proc. of the 2011 ASABE International Meeting, August 7-10, Louisville, KY.
- Shearer, S.A., S.K. Pitla, and J.D. Luck. 2010. Trends in the automation of agricultural field machinery. In Proc. of the 21st Annual Meeting of the Club of Bologna, November 13-14, Bologna, Italy.
- Luck, J.D., A. Sharda, S.K. Pitla, J.P. Fulton, and S.A. Shearer. 2010. Generating herbicide effective application rate maps based on GPS position, nozzle pressure, and boom section actuation data collected from sprayer control systems. Paper No. 498 in Proc. of the 10th International Conference on Precision Agriculture, July 18-21, Denver, CO.
- Sharda, A., J.D. Luck, J.P. Fulton, S.A. Shearer, T.P. McDonald, and D. Mullenix. 2010. Tip flow uniformity when using different automatic section control technologies during field operations. Paper No. 496 in Proc. of the 10th International Conference on Precision Agriculture, July 18-21, Denver, CO.
- Stombaugh, T.S., R.S. Zandonadi, J.D. Luck, and S.A. Shearer. 2010. Tools for evaluating the potential of automatic section control. Paper No. 305 in Proc. of the 10th International Conference on Precision Agriculture, July 18-21, Denver, CO.
- Sharda, A., J.D. Luck, J.P. Fulton, S.A. Shearer, T.P. McDonald, and D. Mullenix. 2010. Application rate stability when implementing automatic section control technology on agricultural sprayers. Paper No. 307 in Proc. of the 10th International Conference on Precision Agriculture, July 18-21, Denver, CO.
- Luck, J.D., R.S. Zandonadi, B.D. Luck, and S.A. Shearer. 2010. Effects of field shape and size on application errors using manual and automatic boom section control on an agricultural sprayer. Paper No. 1009611 in Proc. of the 2010 ASABE International Meeting, June 20-23, Pittsburgh, PA.
- Luck, J.D., M.P. Sama, S.K. Pitla, and S.A. Shearer. 2010. Pneumatic control of a variable orifice nozzle. Paper No. 1009618 in Proc. of the 2010 ASABE International Meeting, June 20-23, Pittsburgh, PA.
- Luck, J.D., A. Sharda, S.K. Pitla, J.P. Fulton, and S.A. Shearer. 2010. Generating 'as-applied' pesticide distribution maps from an agricultural sprayer based on nozzle pressure data. Paper No. 1009598 in Proc. of the 2010 ASABE International Meeting, June 20-23, Pittsburgh, PA.
- Pitla, S.K., J.D. Luck, and S.A. Shearer. Multi-robot system control architecture (MRSCA) for agricultural production. Paper No. 1008703 in Proc. of the 2010 ASABE International Meeting, June 20-23, Pittsburgh, PA.
- Pitla, S.K., J.D. Luck, and S.A. Shearer. Low-cost obstacle detection sensor array for unmanned agricultural vehicles. Paper No. 1008702 in Proc. of the 2010 ASABE International Meeting, June 20-23, Pittsburgh, PA.
- Sharda, A., J.D. Luck, J.P. Fulton, S.A. Shearer, and T.P. McDonald. Nozzle uniformity for agricultural sprayers operating under field operation when using automatic section control technology. Paper No. 1009386 in Proc. of the 2010 ASABE International Meeting, June 20-23, Pittsburgh, PA.
- Veal, M.W., S.A. Shearer, T.S. Stombaugh, J.D. Luck, and B.K. Koostra. 2009. Automated tractor guidance and implement tracking error assessment. Paper included in Proc. of the 67th Conference "Land.Technik-AgEng 2009," November 6-7, Hannover, Germany.
- Luck, J.D., A.C. Pike, S.K. Pitla, T.G. Mueller, and S.A. Shearer. 2009. Evaluation of a terrain attribute model for locating areas suitable for grassed waterways in agricultural settings. Paper No. 096801 in Proc. of the 2009 ASABE International Meeting, June 21-25, Reno, NV.

- Luck, J.D., S.K. Pitla, R.S. Zandonadi, and S.A. Shearer. 2009. Development of GIS-based chemical distribution maps from sprayer performance data. Paper No. 096818 in Proc. of the 2009 ASABE International Meeting, June 21-25, Reno, NV.
- Pitla, S.K., J.D. Luck, and S.A. Shearer. 2009. Cut-crop edge detection using laser sensors. Paper No. 096717 in Proc. of the 2009 ASABE International Meeting, June 21-25, Reno, NV.
- Pitla, S.K., J.D. Luck, and S.A. Shearer. 2009. Guidance directrix generation using laser sensors. Paper No. 096726 in Proc. of the 2009 ASABE International Meeting, June 21-25, Reno, NV.
- R.S. Zandonadi, T.S. Stombaugh, J.D. Luck, and S.A. Shearer. 2009. Software tool for estimating overlapped areas in agricultural field operations. Paper No. 096957 in Proc. of the 2009 ASABE International Meeting, June 21-25, Reno, NV.
- Luck, J.D., S.K. Pitla, and S.A. Shearer. 2008. Sensor ranging technique for determining corn plant population. Paper No. 084573 in Proc. of the 2008 ASABE International Meeting, June 29-July 2, Providence, RI.
- Pitla, S.K., J.D. Luck, and S.A. Shearer. 2008. Automatic guidance system development using low cost ranging devices. Paper No. 084575 in Proc. of the 2008 ASABE International Meeting, June 29-July 2, Providence, RI.
- Luck, J.D., S.R. Workman, and S.F. Higgins. 2006. Hydrologic properties of pervious concrete. Paper No. 067063 in Proc. of the 2006 ASABE International Meeting, July 9-12, Portland, OR.

Presentations and Poster Sessions

- Droplet Spectra Characteristics from a Variable-Orifice Nozzle at Constant Pressures. Presentation for the August, 2012 ASABE International Meeting, Dallas, TX.
- Spray Pattern and Droplet Spectra Characteristics from an Actively Controlled Variable-Orifice Nozzle. Presentation for the July, 2012 International Conference on Precision Agriculture, Indianapolis, IN.
- Discharge Rate and Spray Pattern Characterization for a Variable-Orifice Nozzle. Presentation for the August, 2011 ASABE International Meeting, Louisville, KY.
- Comparison of two Tracers for Characterizing Direct Injection System Response. Presentation for the August, 2011 ASABE International Meeting, Louisville, KY.
- Characterization and Quantification of Pesticide Application Errors for Manual versus Automatic Boom Section Control. Presentation for the August, 2011 ASABE International Meeting, Louisville, KY.
- Generating Herbicide Effective Application Rate Maps Based on GPS Position, Nozzle Pressure, and Boom Section Actuation Data Collected from Sprayer Control Systems. Poster session for the July, 2010 International Conference on Precision Agriculture, Denver, CO.
- Effects of Field Shape and Size on Application Errors Using Manual and Automatic Boom Section Control on an Agricultural Sprayer. Poster session for the June, 2010 ASABE International Meeting, Pittsburgh, PA.
- Generating 'As-Applied' Pesticide Distribution Maps from an Agricultural Sprayer Based on Nozzle Pressure Data. Presentation for the June, 2010 ASABE International Meeting, Pittsburgh, PA.
- Pneumatic Control of a Variable Orifice Nozzle. Presentation for the June, 2010 ASABE International Meeting, Pittsburgh, PA.
- Quantification and Mitigation of Pesticide Application Errors on Kentucky Soybean Farms. Presentation for the March, 2010 Kentucky Soybean Promotion Board Research Meeting, Princeton, KY.
- Grassed Waterway Planning Model Evaluated for Agricultural Fields in the Western Coal Field Physiographic Region of Kentucky. Presentation for the November, 2009 ASA-CSSA-SSSA International Meetings, Pittsburgh, PA.
- Development of GIS-Based Chemical Distribution Maps from Sprayer Performance Data. Poster session for the June, 2009 ASABE International Meeting, Reno, NV.
- Evaluation of a Terrain Attribute Model for Locating Areas Suitable for Grassed Waterways in Agricultural Settings. Presentation for the June, 2009 ASABE International Meeting, Reno, NV.

Development of a GIS-Based Model for Predicting Off-Rate and Off-Target Sprayer Application Errors. Poster session for the February, 2009 ASABE Agricultural Equipment Technology Conference, Louisville, KY.

Signal Processing Technique for Determining Corn Plant Population. Presentation for the July, 2008 ASABE International Meeting, Providence, RI.

Solid/Liquid Separation and Waste Remediation using Pervious Concrete. Presentation for the September, 2007 Portland Cement Association Fall Meeting, Chicago, IL.

Effects of Pervious Concrete on Potential Environmental Impacts from Animal Production Facilities. Poster session for the March, 2007 Kentucky Water Resources Research Institute Annual Symposium, Lexington, KY.

Hydrologic Properties of Pervious Concrete. Presentation for the July, 2006 ASABE International Meeting, Portland, OR.

Current and Previously Funded Projects

Luck, J.D., D.L. Martin, and R.B. Ferguson. Improving Irrigation Water and Energy use Efficiency through Accurate Spatial and Temporal Management. NE Center for Energy Sciences Research: Water, Energy, and Agricultural Initiative-Phase 2. **\$129,200**, 2013-2014.

Ferguson, R.B., **J.D. Luck**, and D. McCallister. Evaluation of Scrubber Ash as Soil Amendment. Public Power Generation Agency, **\$256,292**, 2013-2014.

Pitla, S.K., M.P. Sama, and **J.D. Luck**. Mobile Application: AgStatMonitor™. American Society of Agricultural and Biological Engineers Mobile App Challenge. **\$9,397**, 2013-2014.

Hoy, R.M., D.K. Keshwani, A.J. Liska, and **J.D. Luck**. Agricultural Industry Advanced Vehicle Technology Benchmark Study for ECOTality/DOE. ECOTality and the Department of Energy. **\$150,000**, 2013.

Luck, J.D., J.P. Fulton, M.J. Darr, S.K. Pitla, T.G. Mueller, and S.A. Shearer. Precision Agriculture Farm Management Software and Field Hardware Training for Kentucky Corn, Soybean, and Small Grains Producers. Kentucky Corn Growers Association. **\$12,500**, 2012-2013.

Luck, J.D., J.P. Fulton, M.J. Darr, S.K. Pitla, T.G. Mueller, and S.A. Shearer. Precision Agriculture Farm Management Software and Field Hardware Training for Kentucky Corn, Soybean, and Small Grains Producers. Kentucky Small Grains Growers Association. **\$5,000**, 2012-2013.

Woldt, W.E., M.J. Kocher, G.E. Meyer, T.G. Franti, **J.D. Luck**, J.D. Woldstad, D.P. Billesbach, and R.B. Ferguson. Application of Unmanned Aircraft Systems in Agriculture and Natural Resources: Research and Development. Hatch Equipment Funds Application, **\$26,146**, 2012.

Keshwani, D.K., M.J. Kocher, and **J.D. Luck**. Validation and Expansion of in-field Models for Logistics and Economics of Biomass Collection. CLAAS Omaha, LLC., **\$61,478**, 2012-2014.

Luck, J.D., S.K. Pitla, M.P. Sama, and S.A. Shearer. Sprayer Controller Evaluation for Improving Spatial Application of Pesticides. Precision Agriculture: Precision Resource Management-Phase VI, USDA/NIFA, **\$49,976**, 2010-2013.

Sama, M.P., T.S. Stombaugh, and **J.D. Luck**. Scalable Control and Data Acquisition for Variable-Rate Applications. Precision Agriculture: Precision Resource Management-Phase VI, USDA/NIFA, **\$48,710**, 2010-2013.

Luck, J.D., S.K. Pitla, and S.A. Shearer. Development of a Harvested Crop Sensing Suite-Subproject 1. John Deere, Inc., **\$25,250**, 2009-2010.

Luck, J.D., S.K. Pitla, and S.A. Shearer. Development of a Harvested Crop Sensing Suite-Subproject 2. John Deere, Inc., **\$18,524**, 2009-2010.

Luck, J.D., S.K. Pitla, M.P. Sama, and S.A. Shearer. Development of a Novel Pneumatic Nozzle Control System for Variable-Rate Pesticide Application. Precision Agriculture: Precision Resource Management-Phase V, USDA/CSREES, **\$40,320**, 2009-2011.

Pitla, S.K., **J.D. Luck**, and S.A. Shearer. Crop Cut-Width Sensing for Improved Accuracy of Yield Monitor Data. Precision Agriculture: Precision Resource Management-Phase V, USDA/CSREES, **\$49,882**, 2009-2011.

- S.A. Shearer and **J.D. Luck**. Quantification and Mitigation of Pesticide Application Errors on Kentucky Soybean Farms-Phase I. Kentucky Soybean Promotion Board. **\$31,116**, 2009-2010.
- S.K. Pitla, **J.D. Luck**, S.A. Shearer, and T.S. Stombaugh. Autonomous Cotton Module Mover. CNH Global, **\$52,322**, 2008-2009.
- Luck, J.D.**, S.A. Shearer, T.S. Stombaugh, and C.R. Dillon. Development of a GIS-Based Model for the Generation of Pesticide and Nutrient Distribution Maps. Precision Agriculture: Precision Resource Management-Phase IV, USDA/CSREES, **\$43,204**, 2008-2010.
- Workman, S.R., and **J.D. Luck**. Pervious Concrete for Solid/Liquid Separation and Waste Remediation. Portland Cement Association Education Foundation. **\$20,000**, 2006-2007.
- Workman, S.R., **J.D. Luck**, and S.F. Higgins. Pervious Concrete for Solid/Liquid Separation and Waste Remediation. USGS Section 104B Program-Administered by the Kentucky Water Resources Research Institute. **\$4,999**, 2006-2007.

Pending Project Proposals Submitted

- Luck, J.D.** and R.B. Ferguson. Precision Agriculture Training with Hardware and Office Software for Nebraska Corn, Soybean, and Wheat Producers. Nebraska Wheat Board. **\$7,436**, 2013-2014.
- Luck, J.D.** Precision Agriculture Training with Hardware and Office Software for Nebraska Corn, Soybean, and Wheat Producers. Nebraska Soybean Board. **\$7,436**, 2013-2014.
- Luck, J.D.** and R.B. Ferguson. Precision Agriculture Training with Hardware and Office Software for Nebraska Corn, Soybean, and Wheat Producers. Nebraska Corn Board. **\$7,436**, 2013-2014.
- Luck, J.D.** and R.B. Ferguson. Assessing Yield Impact from Corn Seeding Rates and Variable Rate Planter Performance using Precision Agriculture Technologies. Nebraska Corn Board. **\$69,358**, 2013-2015.
- Luck, J.D.** and T.G. Mueller. Precision Agriculture Farm Management Software and Field Hardware Training for Kentucky Corn, Soybean, and Small Grains Producers. Kentucky Soybean Promotion Board. **\$9,936**, 2013-2014.

Other Project Proposals Submitted

- Keshwani, D.K. and **J.D. Luck**. Optimization of Cellulosic Biofuels from Perennial Grasses Grown on Marginal Land in South Dakota. USDA-NIFA, Biomass Research and Development Initiative (South Dakota State University Lead Institution). **\$331,205**, 2013-2015. (Not Funded)
- Luck, J.D.** and R.B. Ferguson. Evaluation of on-the-go Crop Canopy Reflectance and Soil Organic Matter Sensors for Improving Nitrogen Use Efficiency. UNL Research Council, Interdisciplinary Grant. **\$20,000**, 2013-2014. (Not Funded)
- Luck, J.D.** and D.R. Keshwani. Precision Agriculture Training for Hardware and Office Software. Dow AgroSciences Proposal for Aid to Education Funding. **\$5,920**, 2013. (Not Funded)
- Luck, J.D.**, A.R. Modenbach, and S.A. Shearer. Biosystems and Agricultural Engineering Graduate Student Recruitment Event. Charles E. Barnhart Fund for Excellence. **\$1,000**, 2010-2011. (Not Funded)
- Luck, J.D.**, A.R. Modenbach, and S.A. Shearer. Biosystems and Agricultural Engineering Graduate Student Recruitment Event. Agricultural and Human Environmental Science Alumni Association Student Support Grant. **\$3,000**, 2010-2011. (Not Funded)
- S.A. Shearer and **J.D. Luck**. Quantification and Mitigation of Pesticide Application Errors on Kentucky Soybean Farms-Phase II. Kentucky Soybean Promotion Board. **\$33,226**, 2010-2011. (Not Funded)

EXTENSION ACTIVITIES

Invited Presentations and Sessions

- Precision Agriculture Technologies. Presentation for the 2013 Growing Michigan Agriculture Conference, Lansing, MI. (80 attendees)
- Field Data Collection, Analysis, and Utilization. Webinar for the 2013 University of Minnesota Extension In-Service Training, Minneapolis, MN (30 attendees)
- Tools for Implementing Variable-Rate Fertilizer Application. Presentation for the August, 2012 Mid-Atlantic Precision Agriculture Equipment Day, Denton, MD. (150 attendees)
- Automated Section Control. Presentation for the February, 2012 Nebraska Agricultural Technologies Association Conference (NEATA) and Trade Show, Grand Island, NE. (25 attendees)
- Sensor Equipped Smart Sprayers. Presentation for the January, 2012 Kentucky Fruit and Vegetable Conference and Trade Show, Lexington, KY. (50 attendees)
- Sprayer Controls: Manual versus Automatic Boom Section Control. Presentation for the July, 2011 InfoAg Conference, Springfield, IL. (80 attendees)
- Precision Technologies for Minimizing the Impact of Crop Production. Presentation for the November, 2009 ASA-CSSA-SSSA Annual International Meetings, Pittsburgh, PA. (120 attendees)

Workshops and Educational Sessions

- Developing Prescription (Rx) maps for variable rate application using SMS. Workshop for the 2013 NEATA Conference, Grand Island, NE. (25 attendees)

Extension Presentations

- Evaluating Variable Rate Technologies using Data Management. Presentation for the 2013 NEATA Conference, Grand Island, NE. (80 attendees)
- Precision Agriculture Technology Updates. Presentation for the 2013 Wilber Crop Clinic, Wilber, NE. (100 attendees)
- Precision Agriculture Technologies. Presentation for the 2012 Richardson Co. Field Day, Humboldt, NE. (30 attendees)
- Precision Agriculture Updates. Presentation for the 2012 NCEA UNL Extension Fall Conference, Grand Island, NE. (60 attendees)
- Options for Improving Field Efficiency. Presentation for the Kentucky Corn Growers Crop Observation and Research Education (CORE) Workshop, March, 2010, Louisville, KY. (20 attendees)

Extension Publications

- Luck, J.D. Agricultural Sprayer Automatic Section Control Systems. Institute of Agriculture and Natural Resources, University of Nebraska-Lincoln (in review).
- Luck, J.D., T.S. Stombaugh, and S.A. Shearer. 2011. Basics of Automatic Section Control for Agricultural Sprayers. AEN-102. UK Cooperative Extension Service.
- Agouridis, C.T., S.J. Wightman, J.A. Villines, and J.D. Luck. 2011. Reducing Stormwater Pollution. AEN-106. UK Cooperative Extension Service.
- Agouridis, C.T., J.A. Villines, and J.D. Luck. 2011. Permeable Pavement for Stormwater Management. AEN-108. UK Cooperative Extension Service.

Popular Press Articles

- Luck, J.D. and P.J. Jasa. 2012. Harvester Fire Awareness. *UNL CropWatch*. Fall, 2012.
- Luck, J.D. and S.A. Shearer. 2011. Boom Benefits. *Corn and Soybean Digest*. January, 2011.
- Luck, J.D. 2010. Benefits of Automatic Boom Section Control. *Kentucky Soybean Sentinel*. Summer, 2010.

DEPARTMENTAL SERVICE AND TEACHING ACTIVITIES

Departmental Committees and Service

- Graduate Studies Committee, Member, UNL Department of Biological Systems Engineering; 2012-present.
- Nebraska Tractor Test Board of Engineers, Member, UNL Department of Biological Systems Engineering; 2012-present.
- ASABE Student Branch, Junior Faculty Advisor, UNL Department of Biological Systems Engineering; 2012-present.
- Quarter Scale Tractor Team, Junior Faculty Advisor, UNL Department of Biological Systems Engineering; 2012-present.
- Research and Graduate Studies Committee, Member. UK Department of Biosystems and Agricultural Engineering; 2009-2011.
- Student Recruitment and Development Committee, Member. UK Department of Biosystems and Agricultural Engineering; 2009-2011.
- Biosystems and Agricultural Engineering Department Chair Search Committee, Member. UK College of Agriculture; 2011.
- Graduate Student Recruitment Event Planning Committee (Ad Hoc), Member. UK Department of Biosystems and Agricultural Engineering; 2010.
- Automatic Boom Section Control Simulation Display for Engineer's Day, Volunteer. UK College of Engineering; February 20, 2010.
- Barnhart Building/Plant Science Building Courtyard Renovation Project, Project Coordinator. UK College of Agriculture; 2010.
- BAE Student Services Coordinator Search Committee (Ad Hoc), Member. UK Department of Biosystems and Agricultural Engineering; 2009.
- Seminar Committee, Member. UK Department of Biosystems and Agricultural Engineering; 2008-2009
- ASABE Student Branch Southeast Rally, Volunteer. UK Department of Biosystems and Agricultural Engineering; 2006.

Departmental Teaching Activities

- Special Problems in Agricultural Engineering: Site-Specific Crop Management (AGEN 496/896), Spring 2013, Instructor.
- Special Topics in Agricultural Engineering: Development and Evaluation of an Automated Spray Pattern Testing Device (AGEN 896), Spring 2013, Instructor.
- Site-Specific Crop Management (AGEN/AGRO/MSYM 431), Fall 2012, Co-Instructor.
- Topics in Biosystems and Agricultural Engineering: Precision Agriculture (BAE 599), Spring 2011, Lecturer-Spatial Data Management/Yield Monitoring and Map Generation (Not Evaluated).
- Structures and Environment Engineering (BAE 427), Spring 2009-2011, Lecturer-Concrete Slab Design Procedures (Not Evaluated).
- Introduction to Biosystems Engineering (BAE 102), Fall 2010, Teaching Assistant and Laboratory Instructor (Student Evaluation Score: 3.8/4.0).
- Agricultural Safety and Health (AEN 463G), Spring 2008, Class Coordinator and Lecturer (Student Evaluation Score: 3.6/4.0).
- Guest Lectures, MSYM 162; AGEN 100.

Graduate Student Advising

- Cody Creech, Ph.D., Agronomy and Horticulture (co-Chair)
- Wesley Schaardt, M.S. Biological Systems Engineering (committee member)

Student Recruitment Activities

- 2013 ASABE Midwest Regional Rally, Faculty Advisor, March 2, 2013.
- 2013 E2 Day, BSE/CASNR. January 9, 2013.
- 2012 Experience the Power of Red Open House; IANR/CASNR. November 3, 2012.

PROFESSIONAL ACTIVITIES AND SERVICE

Professional Activities and Service

- PM-58, Agricultural Equipment Automation Committee, ASABE, Vice-Chair, 2012-present.
- PM-54, Precision Agriculture Committee, ASABE, Member, 2012-present.
- Agricultural Equipment Technology Conference Planning Committee, ASABE, Member, 2011-present.
- Young Professionals Community, ASABE, Member, 2006-present
- Computers and Electronics in Agriculture, Reviewer, 2011-present
- Sensors, Reviewer, 2011-present.
- Transactions of the ASABE, Reviewer, 2010-present.
- Applied Engineering in Agriculture, Reviewer, 2010-present.
- PM-58, Agricultural Equipment Automation Committee, ASABE, Secretary, 2011-2012.
- IET-318, Mechatronics and Robotics Committee, ASABE, Member, 2009-2012.

Professional Development Activities

Research Development Fellows Program, UNL-Office of Research and Economic Development, 2012-2013.

Instructional Improvement Plan; UNL-Department of Biological Systems Engineering.
AGEN/AGRO/MSYM 431 (Site-Specific Crop Management), Fall 2012.

Search Committee Best Practices; ADVANCE-Nebraska, Fall 2012.