

## **Erin Georgette (Wilkerson) Webb, Ph.D., P.E.**

Environmental Sciences Division  
Oak Ridge National Laboratory  
P.O. Box 2008  
Oak Ridge, Tennessee 37831-6422  
(865) 576-4814  
webbeg@ornl.gov

### **EXPERIENCE**

*Agricultural Engineer, Research and Development Staff, 2012 – present*  
Environmental Sciences Division  
Oak Ridge National Laboratory, Oak Ridge, Tennessee

*Adjunct Faculty, 2012 – present*  
Department of Biosystems Engineering and Soil Science  
University of Tennessee, Knoxville, Tennessee

*Adjunct Faculty, 2007 – present*  
Department of Biosystems and Agricultural Engineering  
University of Kentucky, Lexington, Kentucky

*Agricultural Engineer, Research and Development Associate, 2007 – 2012*  
Environmental Sciences Division  
Oak Ridge National Laboratory, Oak Ridge, Tennessee

*Technical Advisor, Temporary Detail, 2008-2009*  
Energy Efficiency and Renewable Energy, Biomass Program  
Department of Energy, Washington, DC

*Assistant Extension Professor, 2005 – 2007*  
Department of Biosystems and Agricultural Engineering  
University of Kentucky, Lexington, Kentucky

### **EDUCATION**

Ph.D., Agricultural and Biological Engineering, December 2005  
University of Florida, Gainesville, Florida

M.S., Biosystems and Agricultural Engineering, May 2002  
University of Kentucky, Lexington, Kentucky

B.S., Agricultural Engineering, biological engineering concentration, Summa cum laude, December 1999  
University of Tennessee, Knoxville, Tennessee

### **HONORS AND AWARDS**

- ASABE Presidential Citation, 2009
- Outstanding Dissertation, University of Florida Agricultural and Biological Engineering, 2005
- NASA Graduate Student Researchers Program Fellowship, 2003 - 2005
- National Science Foundation Graduate Research Fellowship, 2000 - 2003
- University of Kentucky Gamma Sigma Delta Outstanding M.S. Student, 2001
- AGCO Student Design Competition – Finalist team, 1999

- University of Tennessee Agricultural Engineering Undergraduate with Professional Promise, 1999
- University of Tennessee College of Agricultural Sciences and Natural Resources Outstanding Junior, 1998; Outstanding Senior, 1999
- ASAE Student Honor Award, 1999

### **PROFESSIONAL REGISTRATION**

Professional Engineer, Commonwealth of Kentucky, 2007 - present

### **PROFESSIONAL SOCIETIES AND ACTIVITIES**

- University of Tennessee Eastern Regional Advisory Council (2014 – 2016)
- ORNL Mentoring Program, Protégé, 2011
- American Society of Agricultural and Biological Engineers (ASABE)
  - Professional Engineers Institute
  - Nominating Committee, 2011-2013
  - Bioenergy Engineering Conference Planning Committee, 2009
  - T-11: Energy Committee, 2008-present; Vice-Chair, 2008; Chair, 2009-2010
  - FPE-709: Biomass Energy & Industrial Products Committee, 2007 - present
  - M-164: Preprofessional Engineer of the Year Committee, 2008-present; Chair, 2008; Vice-Chair 2009
- University of Kentucky Biosystems and Agricultural Engineering Advisory Council, 2010 - 2013
- ORNL Committee for Women, 2007-2008
- Sigma Xi (research)
- Tau Beta Pi (engineering)
- Gamma Sigma Delta (agriculture)

### **TECHNICAL WORKING GROUPS**

- Southeastern Partnership for Integrated Biomass Supply Systems, Switchgrass Team, 2011 - present
- Biomass Research & Development Board Interagency Feedstock Logistics Working Group, 2008-2009, 2011 - present
- USDA Feedstock Logistics Advisory Team, 2008
- Southern Biomass Transportation and Logistics Working Group, 2008

### **ADVISING**

- Magen Shedden, Higher Education Research Experience, Oak Ridge National Laboratory, 2013
- Magen Shedden, Southeast Partnership for Integrated Biomass Supply Systems, 2012-2013
- Robert Grisso, HERE Faculty Appointment (sabbatical from Virginia Tech), 2012
- Yun Wu, Post-Master's appointment, Oak Ridge National Laboratory, 2010-2011
- M. Wesley Brummette, Higher Education Research Experience, Oak Ridge National Laboratory, 2011
- Sara Ivy, Tennessee Governor's Academy Internship, Oak Ridge National Lab, 2010-2011
- Kevin Caffrey, Advanced Short-Term Research Opportunity, Oak Ridge National Lab, 2010
- Jamie R. Marsh, advisory committee, M.S. in Biosystems and Agricultural Engineering, University of Kentucky, completed August 2008

### **DOE FUNDING RECEIVED**

- Downing, M. E. and E. G. Webb. Ongoing. Fire Codes and Prevention in IBR's. *DOE Bioenergy Technologies Office*, \$570K (2014)

- **E. G. Webb** and S. Sokhansanj. Ongoing. Feedstock Supply System Analysis. *DOE Office of Biomass Program*, \$650K (2014).
- Sokhansanj, S. and **E. G. Webb**. Feedstock Logistics. *DOE Office of Biomass Program*, \$4 million (2007–2013).
- Langholtz, M., L. Eaton, **E. G. Webb**, A. Turhollow. Feedstock Resource Analysis. *DOE Office of Biomass Program*, \$4.6 million (2009–2013).
- **Webb, E. G.** 2009–2011. China Bioenergy Feedstock Supply Analysis. *DOE Office of Biomass Program*, \$450K

#### OTHER FUNDING RECEIVED

- Langholtz, M., E. Barnett, **E. Webb**, M. Downing. 2011. An operations plan for supplying feedstock to ORNL Biomass Steam Plant from an ORNL Biomass Farm. *ORNL Operation Improvement Program*, \$90,000.
- Rials, T. (University of Tennessee) et al. 2011. Southeast Partnership for Integrated Biomass Supply Systems (IBSS). *USDA Agriculture and Food Research Initiative*, \$15 million (funding provided for student support for ORNL).
- Nokes, S. (University of Kentucky) et al. 2010. On-farm Biomass Preprocessing Towards an Integrated High Solids Transporting/Storing/Processing System. *USDA Biomass Research and Development Initiative*, \$6,932,786 (\$90,000 to ORNL).
- Pillai, R., S. Daw, C. Finney, S. Nukala, and **E. Wilkerson**. 2009. Value Chain Analysis for the Development of Sustainable Biomass-based Steam Plant Operations. ORNL internally funded project. \$135,000
- Leiby, P. D. Oladosu, **E. Wilkerson**. 2009. Decision Support for Secure and Sustainable Bioenergy System. ORNL Laboratory Directed Research and Development Fund. \$700,000

#### PUBLICATIONS

- Sokhansanj, S., **E. G. Webb**, and A. Turhollow. 2014. *Evaluating industrial drying of cellulosic feedstocks for bioenergy – A systems approach*. ORNL/TM – 2014/165 (in preparation).
- Davison, B. H., C. C. Brandt, A. M. Guss, U. C. Kalluri, A. V. Palumbo, and **E. G. Webb** with R. Stouder. 2014. *Report on Impact of Biotechnology on US Bioenergy*.
- Webb, E. G.** and S. Sokhansanj. 2014. *Sensitivity Analysis of Biomass High-Tonnage Logistics Projects*. Oak Ridge National Laboratory. ORNL/TM-2013/568.
- Webb, E. G.**, S. Sokhansanj, and A. Turhollow. 2013. *Simulation of the DOE High-Tonnage Biomass Logistics Demonstration Projects: AGCO Corporation*. Oak Ridge National Laboratory. ORNL/TM-2013/323.
- Webb, E. G.**, S. Sokhansanj, and A. Turhollow. 2013. *Simulation of the DOE High-Tonnage Biomass Logistics Demonstration Projects: FDC Enterprises*. Oak Ridge National Laboratory. ORNL/TM-2013/338.
- Webb, E. G.**, S. Sokhansanj, and A. Turhollow. 2013. *Simulation of the DOE High-Tonnage Biomass Logistics Demonstration Projects: TennEra LLC*. Oak Ridge National Laboratory. ORNL/TM-2013/375.
- Webb, E. G.**, S. Sokhansanj, and A. Turhollow. 2013. *Simulation of the DOE High-Tonnage Biomass Logistics Demonstration Projects: SUNY*. Oak Ridge National Laboratory. ORNL/TM-2013/376.
- Langholtz, M., **E. Webb**, B. L. Preston, A. Turhollow, N. Breuer, L. Eaton, A. King, S. Sokhansanj, S. S. Nair, and M. E. Downing. 2013. Advancing Climate Risk Management for the U.S. Cellulosic Biofuels Supply Chain. *Climate Risk Management (in review)*.

- Grisso, R. D. and **E. G. Webb**. 2012. *Determining Available Work Days for Biomass Logistics Systems: Proposed Method*. Oak Ridge National Laboratory. ORNL/TM-2012/260 (in review).
- Webb, E. G.** and Y. Wu. 2012. *A case study of agricultural residue availability and cost for a cellulosic ethanol conversion facility in the Henan province of China*. Oak Ridge National Laboratory. ORNL/TM-2011/534.
- Webb, E.**, M. Langholtz, E. Barnett, K. Caffrey, M. W. Brummette, M. Downing. 2011. *Utilizing resources of the Oak Ridge Reservation to promote forest health and supply wood chips to the ORNL biomass steam plant*. Oak Ridge National Laboratory. ORNL/TM-2011/525.
- Langholtz, M., K. Caffrey, E. Barnett, **E. Webb**, M. W. Brummette, M. Downing. 2011. *Demonstration of the BioBaler harvesting system for collection of small-diameter woody biomass*. Oak Ridge National Laboratory. ORNL/TM-2011/524.
- Turhollow, A. F., **E. G. Webb**, and M. Downing. 2010. *Review of Sorghum Production Practices: Applications for Bioenergy*. Oak Ridge National Laboratory. ORNL/TM-2010/7.
- Fulcher, A., T. Steele, **E. Wilkerson**, R. Geneve, and R. Gates. 2010. Using Transpiration Chambers to Detect Initial Transpiration in Cuttings and Quantify Transpiration in Seedlings. *Acta Horticulturae* 893.
- Turhollow, A. F., **E. G. Wilkerson**, and S. Sokhansanj. 2009. *Cost Methodology for Biomass Feedstocks: Herbaceous Crops and Agricultural Residues*. Oak Ridge National Laboratory. ORNL/TM-2008/105.
- Wilkerson, E. G.** and R. D. Perlack. 2008. Chapter 3 – Resource Assessment, Economics and Technology for Collection and Harvesting. In *Renewable Energy from Forest Resources of the United States*. B. Soloman and V. Luzadis, ed.
- Gunderson, C. A., E. B. Davis, H. I. Jager, T. O. West, R. D. Perlack, C. C. Brandt, S. D. Wullschleger, L. M. Baskaran, **E. G. Wilkerson**, and M. E. Downing, 2008. Exploring Potential U. S. Switchgrass Production for Lignocellulosic Ethanol. Oak Ridge National Laboratory, ORNL/TM-2007-183.
- S. Sokhansanj, A. F. Turhollow, and **E. G. Wilkerson**. 2008. *Development of the Integrated Biomass Supply Analysis and Logistics (IBSAL) Model*. Oak Ridge National Laboratory, ORNL/TM-2006/57.
- Wilkerson, E. G.**, D. B. Blackwelder, R. D. Perlack, D. J. Muth, and J. R. Hess. 2008. *A preliminary assessment of the state of harvest and collection technology for forest residues*. Oak Ridge National Laboratory, ORNL/TM-2007/195.
- Wilkerson, E. G.**, R. A. Bucklin, P. A. Fowler, and V. Y. Rygalov. 2007. Convective Heat Transfer of Radish Leaves in Hypobaric Conditions. *Transactions of the ASABE* 50(3): 981-991.
- Wilkerson, E. G.**, R. A. Bucklin, and P. A. Fowler. 2007. Development of Small-Scale Hypobaric Plant Chambers. *Applied Engineering in Agriculture* 23(4): 531-537.
- Wilkerson, E.G.**, R. S. Gates, S. Zolnier, S. T. Kester, and R. L. Geneve. 2005. Transpiration Capacity in Poinsettia Cuttings at Different Rooting Stages and the Development of a Cutting Coefficient for Scheduling Mist. *Journal of the American Society for Horticultural Science* 130(3):295-301.
- Wilkerson, E.G.**, R.S. Gates, S. Zolnier, S.T. Kester, and R.L. Geneve. 2005. Predicting rooting stages in poinsettia cuttings using a root zone temperature-based model. *Journal of the American Society for Horticultural Science* 130(3):302-307.
- Bucklin, R. A., P. A. Fowler, V. Y. Rygalov, R. M. Wheeler, Y. Mu, I. Hublitz, **E. G. Wilkerson**. 2004. Greenhouse Design for the Mars Environment: Development of a Prototype, Deployable Dome. *Acta Horticulturae* 659: 127-134.
- Geneve, R.L., R.S. Gates, S. Zolnier, **E. Wilkerson**, and S. T. Kester. 2004. Environmental Control Systems for Mist Propagation of Cuttings. *Acta Horticulturae* 630:297-303.
- Wilkerson, E. G.** and R. S. Gates. 2003. Controlled Environment System for Studying Root Zone Temperature Effects on Cutting Propagation. *Applied Engineering in Agriculture* 19(4): 483-489.
- Pordesimo, L. O., **E. G. Wilkerson**, A. R. Womac, and C. N. Cutter. 2002. Process Engineering Variables in the Spray Washing of Meat and Produce. *Journal of Food Protection* 65(1): 222-237.

Shubin S., S. Kester, **E. Wilkerson**, J. Buxton and R. L. Geneve. 2001. Design of a propagation unit that independently controls atmospheric and medium moisture. *Combined Proceedings International Plant Propagator's Society* 51:518-520.

## PRESENTATIONS

- Grisso, R.D., G. Moxley, **E.G. Webb**, J.S. Cundiff, and S. Sokhansanj. 2013. In-Field Performance of Round Balers Using DGPS. ASABE Paper and Presentation No. 131538975. St. Joseph, MI:ASABE
- Grisso, R.D., **E.G. Webb**, J.S. Cundiff, and S. Sokhansanj. 2013. Parametric Study of Machinery Management Relationships on Biomass Baling. ASABE Paper and Presentation No. 131539003. St. Joseph, MI:ASABE
- Shedden, M., **E. Webb**, and K. Goddard. 2013. Sensitivity Analysis of Switchgrass Harvest Cost Estimation. Poster presented at the American Society of Agricultural and Biological Engineers Annual International Meeting; July 21-24, 2013; Kansas City, MO.
- \*Caffrey, K., **E. G. Webb**, M. Langholtz, E. Barnett, M. Downing, and M. W. Brummette. 2012. A case study of combining forest management, sustainability, and bioenergy at Oak Ridge National Laboratory. *American Society of Agricultural and Biological Engineers Annual International Meeting*, Dallas, TX.
- Webb, E. G.**, P. Leiby, R. Uria-Martinez, G. Oladosu, C. Liu, N. Thomas, and D. Bowman. 2012. Decision Support for Secure for Sustainable Bioenergy Systems. *University of Tennessee Biosystems Engineering and Soil Science Department 1<sup>st</sup> Annual Research Symposium, Knoxville, TN.*
- Webb, E. G.**, M. Langholtz, E. Barnett, and M. Downing. 2011. Sustainability Considerations for the ORNL Biomass Steam Plant Feedstock Supply. *Center for BioEnergy Sustainability Forum, Oak Ridge National Laboratory, Oak Ridge, TN.*
- \*Caffrey, K., **E. Webb**, S. Ivy. 2011. Multi-Supplier Model for Evaluating Feedstock Logistics Costs and Environmental Impacts of Bioenergy Feedstock Supplies. *American Society of Agricultural and Biological Engineers Annual International Meeting*, Louisville, KY.
- \*Caffrey, K., **E. Webb**, S. Daw, C. Finney, G. Wiggings, and Y. Hao. 2011. Characterization of Woody Biomass for Gasification: Case Study Analysis of Implications of Feedstock Logistics Costs, Select Environmental Impacts, and Process Performance. *American Society of Agricultural and Biological Engineers Annual International Meeting*, Louisville, KY.
- \*\***Webb, E. G.** 2011. Advancing the Biomass Supply Chain. *Kentucky Statewide Energy Workshop on Energy Efficiency and Renewable Energy*. Louisville, Kentucky.
- Webb, E.G.** J. Jacobson, S. Sokhansanj, and S. Tagore. 2010. Programmatic Requirements for Modeling Feedstock Logistics. *American Society of Agricultural and Biological Engineers Annual International Meeting*, Pittsburgh, Pennsylvania.
- Wilkerson, E. G.**, S. Sokhansanj, and R. D. Perlack. 2008. Modeling the Availability of Agricultural Residues Suitable for Wet or Dry Harvest Technologies (poster). *American Society of Agricultural and Biological Engineers Annual International Meeting*, Providence, Rhode Island.
- Wilkerson, E. G.**, S. Sokhansanj, A. F. Turhollow, and A. R. Womac. 2008. Switchgrass Storage Options for Tennessee Producers. *American Society of Agricultural and Biological Engineers Annual International Meeting*: Providence, Rhode Island.
- \*Marsh, J., R. S. Gates, G. B. Day, G. E. Aiken, and **E. G. Wilkerson**. 2008. Assessment of an Injectable RFID Temperature Sensor for Indication of Horse Well-Being. *American Society of Agricultural and Biological Engineers Annual International Meeting*, Providence Rhode, Island
- Wilkerson, E. G.** 2008. *Costs of Storing Biomass*. Agricultural Equipment Technology Conference: Louisville, Kentucky.

- \*Amaral, M.F.P., R.S. Gates, **E.G. Wilkerson**, D.G. Overhults, I.F.F. Tinoco, H. Li, R.T. Burns, H. Xin, and J.W. Earnest. 2007. Comparison between two systems for ammonia emission monitoring in broiler houses. *Proceedings of the International Symposium on Air Quality and Waste Management for Agriculture*. Broomfield, Colorado, USA.
- \*Day, D. L., S. G. McNeill, and **E. G. Wilkerson**. 2007. Assessment of Safety in Cattle Handling Facilities on Kentucky Farms. *American Society of Agricultural and Biological Engineers Annual International Meeting*, Minneapolis, Minnesota.
- \*Marsh, J., R. S. Gates, G. Aiken, and **E. G. Wilkerson**. 2007. Placement of an Injectable Temperature Sensor for Indication of Horse Well-Being. *American Society of Agricultural and Biological Engineers Annual International Meeting*, Minneapolis, Minnesota.
- Wilkerson, E.G.**, R. A. Bucklin, P. A. Fowler, and R. M. Wheeler. 2005. Plant Evapotranspiration in a Greenhouse on Mars. *American Society of Agricultural Engineers Annual International Meeting*, Tampa, Florida.
- Wilkerson, E.G.**, R. A. Bucklin, P. A. Fowler, R. M. Wheeler, and J. D. Peterson. 2004. Design Considerations for a Greenhouse on Mars: Accounting for Plant Evapotranspiration. *Society of Agricultural Engineers Annual International Meeting*, Ottawa, Ontario, Canada.
- Wilkerson, E. G.**, I. Hublitz, and R. Bucklin. 2004. Analysis of Design Considerations for a Mars Greenhouse. *Habitation 2004: Conference on Space Habitation Research and Technology Development*, Orlando, Florida.
- Wilkerson, E. G.** 2003. Plant and Environment Interactions in a Mars Greenhouse. *Kennedy Space Center - Florida Space Grant Consortium Research Conference*, Kennedy Space Center, Florida.
- Wilkerson, E.G.**, R. L. Geneve, S. Kester, and R. S. Gates. 2002. Measuring and Quantifying the Root Generation Process Using Rapid Sectioning and Imaging Technologies. *Society of Agricultural Engineers Annual International Meeting*, Chicago, Illinois.
- Wilkerson, E.G.**, R. S. Gates, and R. L. Geneve. 2002. Effects of Root Zone Temperature on Root Development and Water Uptake During Poinsettia Propagation. *Society of Agricultural Engineers Annual International Meeting*, Chicago, Illinois.
- Colliver, D. G., R. S. Gates, and **E. G. Wilkerson**. 2002. Selection of Appropriate Design Weather Conditions for Sizing Evaporative Cooling Systems. ASAE Paper No. 024038. *Society of Agricultural Engineers Annual International Meeting*, Chicago, Illinois.
- Wilkerson, E.G.**, R. S. Gates, R. L. Geneve. 2002. Effects of Media Temperature on Poinsettia Propagation. Department of Agricultural Engineering, Federal University of Vicosa, Brazil.
- Wilkerson, E.G.**, R. S. Gates, and R. L. Geneve. 2002. Effects of Media Temperature on Poinsettia Propagation. *Kentucky Landscape Industries Conference*, Lexington, Kentucky.
- Wilkerson, E.G.** and R. S. Gates. 2001. An Empirical Model of Water Uptake and Root Development for Poinsettia Cuttings. ASAE Paper No. 013040. *Society of Agricultural Engineers Annual International Meeting*, Sacramento, California.
- Wilkerson, E. G.**, R. L. Geneve, and R. S. Gates. 2000. Image Analysis for Indication of Seed Germination. *Society of Agricultural Engineers Annual International Meeting*, Milwaukee, Wisconsin.

\* First author is student advisee, \*\* Invited

#### EXTENSION PRESENTATIONS AND PUBLICATIONS

- Shedden, M., **E. Webb**, and K. Goddard. 2013. Producing Switchgrass for Bioenergy – Baling with Twine vs. Net Wrap. UT Extension Publication W 298. Knoxville, TN: University of Tennessee.
- **Wilkerson, E. G.** 2007. *Planning and Building Hay Barns that Work*. Tennessee Nutrition Conference. Franklin, Tennessee.

- **Wilkerson, E. G.** 2007. *Buildings and Facilities for Beef Farms*. 2007 Advanced Master Cattleman. Oldham County, Kentucky.
- **Wilkerson, E. G.** 2006. *Diagnosing Stray Voltage Problems in Dairies*. Stray Voltage Awareness Workshop. Bowling Green, Kentucky.
- Bucklin, R. A., J. D. Leary, D. B. McConnell, and **E. G. Wilkerson**. 2004. *Fan and Pad Greenhouse Evaporative Cooling Systems*. Gainesville, Florida: University of Florida IFAS Extension.

#### **COURSES TAUGHT**

- *BAE 581: Physics of Plant and Animal Environments*, Spring 2007, Biosystems and Agricultural Engineering, University of Kentucky
- *BAE 427: Structures and Environment Design*, Fall 2001, Spring 2006, Spring 2007, Biosystems and Agricultural Engineering, University of Kentucky
- *AOM 4642: Structures and Environment*, Fall 2003, Agricultural Operations Management, University of Florida