

# Dr. Michael Montross

## Curriculum Vitae

### CONTACT INFORMATION

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### EDUCATION

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- Ph.D. in Agricultural Engineering. Purdue University, West Lafayette, IN. Completion Date: December, 1999. Dissertation Topic: Finite element modeling of stored grain ecosystems and alternative pest control techniques.
- M.S. in Agricultural Engineering. Michigan State University, East Lansing, MI. Completion Date: August 1995. Thesis Topic: Counterflow heating/cooling in the drying of corn.
- B.S. in Agricultural Engineering. Michigan State University, East Lansing, MI. Completion Date: May 1994.

### EXPERIENCE

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- Professor, Biosystems and Agricultural Engineering Department, University of Kentucky, July 2012 - present.
- Associate Professor, Biosystems and Agricultural Engineering Department, University of Kentucky, July 2005 – June 2012.
- Assistant Professor, Biosystems and Agricultural Engineering Department, University of Kentucky, November 1999 – June 2005.
- Graduate Research Assistant. Purdue University. January 1996 – November 1999.
- Graduate Research Assistant. Michigan State University. May 1994 – August 1995.

### AWARDS/LICENSURE

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- Registered PE since 2003, Kentucky #23403.
- Loys Mather Outstanding Teaching Award, College of Agriculture Student Council, 2007.
- Outstanding Teacher in Biosystems and Agricultural Engineering 2007, 2008, 2009, 2010.
- Award from the Kentucky Governor's Office of Agricultural Policy for energy audits for improved farm energy efficiency 2011.
- 2007 ASABE Honorable Mention Paper Award FTIR analysis.

## GRANTS AND CONTRACTS

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### Nationally Competitive

#### *Current*

1. Sama, M.P., M.D. Montross, J. Dvorak, T. Mark, S.G. McNeill. Development of a CAN-based data management and decision support system for optimal equipment and harvest timing from grain harvest to storage. USDA-AFRI. Project duration: 10/15 – 09/18. \$500,000.
2. Dvorak, J., M. Sama, J. Jackson, M. Montross, B. Goff, J. Williamson. Lidar and Photogrammetry to Map Alfalfa Yield and Quality Using Unmanned Aircraft Systems. Alfalfa and Forage Research Program. USDA-NIFA. Project duration: 09/16-08/19. \$249,975.

#### *Completed*

1. Nokes, S.E., M.D. Montross, C. Crofcheck, S. DeBolt, G. Halich, B. Knutson, C. Lee, B. Lynn, T. Mueller, S. Rankin, J. Seay, S. Shearer, S.R. Smith, Jr., T. Stombaugh, R. Anex, M. Flythe, E. Webb, M. Chinn, and M. Veal. On-farm biomass processing: towards an integrated high solids transporting / storing / processing system. USDA-DOE Biomass Research Development Initiative. Project duration: 07/11 – 06/16. \$6,932,786. Non-federal cost share provided by CNH America totaling \$1,835,000.
2. Gates, R.S., H. Xin, J.R. Bicudo, M.D. Montross, C.L. Crofcheck, B.L. Steward, I.F. Tinôco, A.L.A. Tinôco, S. Zolnier, J.W.B. Nascimento, P.D. Fernandes, D.A. Furtado, T. Yanagi, Jr., V.H. Teixeira, I.J.O. Silva, and D.J. Moura. Biosystems and agricultural engineering training – Consortium for sustainable plant and animal production systems. US-Brazil Higher Education Consortia Program (FIPSE-CAPES). US Department of Education. Project duration: 09/01/03 to 08/31/07. \$204,000.
3. Montross, M.D. and S.G. McNeill. Optimization of aeration systems for value-added crop preservation. USDA-NRICGP Food Processing Characterization/Processing/Product Research. Project duration: 09/00 to 09/05. \$200,000.
4. Montross, M.D., S.G. McNeill, S.A. Shearer, and T.S. Stombaugh. Post-harvest physical properties of corn stover. Department of Energy, Oak Ridge National Laboratory. Project duration: 09/01 to 09/03. \$139,674.

### Other Grants

#### *Current*

1. Montross, M.D. and S.G. McNeill. Factors that affect packing during storage. NC-213 Anderson Grant Program. Ohio State University. Project duration: 01/15-12/16. \$50,000.
2. McNeill, S., D. Overhults, M. Montross Technical Assistance for Energy Audits and Renewable Energy Projects in Rural Kentucky. USDA Rural Development for Energy Audits. Project duration: 07/15-06/17. \$67,169.

#### *Completed*

1. Montross, M.D., M.P. Sama, J. Dvorak, and A.P. Turner. Crop logistics. CNH Industrial. Project duration: 10/15-03/16. \$20,000.

2. Montross, M.D. Alternative methods to increase bale density CNH Industrial. Project duration: 6/14-6/15. \$81,362.
3. Montross, M.D. Methods to increase bale density. CNH America. Project duration: 11/11 – 12/12. \$132,000.
4. Montross, M.D. Evaluation of pressure in crop processing systems. CNH America. Project duration: 12/12 – 3/14. \$33,000.
5. Montross, M.D, S.G. McNeill. Laboratory and field data for establishing new grain packing factors. USDA-ARS. Project duration: 09/09-06/14. \$370,000.
6. Montross, M.D. East Kentucky bioenergy assessment. Morehead State University. Project duration: 10/10-12/11. \$99,375.
7. Montross, M.D., W.C. Adams, S.A. Shearer, J.H. Wilhoit. Handling and Storage Requirements of Material Other than Grain. Funded by CNH America. Project duration: 09/08-10/11. \$45,245.
8. S.G. McNeill, D.G. Overhults, M.D. Montross, and S.A. Shearer. Energy Audits for Grain and Poultry Producers in Kentucky. USDA-Rural Energy for American Program. Project duration: 10/10 – 9/13. \$100,000.
9. Montross, M.D., S.G. McNeill, S.R. Smith. Quantifying field drying rate potential for herbaceous energy crop. Oak Ridge National Laboratory. Project duration 10/10-9/11. \$25,000.
10. Montross, M.D., S. DeBolt, S.R. Smith, Jr. Developing a biomass energy crop trial for renewable energy production. USDA-New Crop Opportunities for KY Phase X Project duration: 08/08-08/12. \$24,716.
11. Andrews, R., M. Crocker, C. Crofcheck, M. Montross. Establishment of a laboratory for biofuels at the University of Kentucky. Department of Energy. Project duration: 07/08 - 01/13. \$1,000,000.
12. Payne, F, C. Crofcheck, M. Montross. Optical Detection of Microbial Contamination in Food Matrices. National Institute for Hometown Security. Project duration: 04/10 - 04/12. \$819,592.
13. Andrews, R., M. Crocker, C. Crofcheck, M. Montross. Demonstration of an algae-based system for CO<sub>2</sub> mitigation from coal-fired power plants. KY Energy and Environment Cabinet. Project duration: 07/11 – 06/12. \$761,553.
14. Andrews, R., M. Crocker, C. Crofcheck, M. Montross. Development of an Algae-based System for CO<sub>2</sub> Mitigation from Coal-fired Power Plants - Year 3. KY Energy and Environment Cabinet. Project duration: 08/10 – 12/11. \$629,826.
15. Andrews, R., M. Crocker, K. Liu, C. Crofcheck, M. Montross. Development of an Algae-based System for CO<sub>2</sub> Mitigation from Coal-fired Power Plants. Kentucky's Department for Energy Development and Independence. Project duration: 7/10-6/11. \$450,000.
16. Montross, M.D., S.R. Smith Jr., D.N. Taulbee, C.L. Crofcheck. Ethanol and electricity potential of switchgrass in Kentucky. USDA-New Crop Opportunities for KY Phase IX. Project duration: 10/07-6/11. \$31,040
17. McNeill, S., D. Johnson, M. Montross. Incidence and Spread of Insects from Bucket Elevator Leg Boots. Ohio State University. Project duration: 01/09-06/11. \$26,000.

18. Taulbee, D, R. Honaker, M. Montross. GOEP R&D Seed Grant: Demonstration of the Combustion Characteristics of Fuel Briquettes made from Fine Coal and Biomass. KY Office of Energy Policy. Project duration: 02/08-09/09. \$79,429
19. Andrews, R., M. Crocker, K. Liu, C. Crofcheck, M. Montross. Development of an Algae-based System for CO<sub>2</sub> Mitigation from Coal-fired Power Plants. Kentucky's Department for Energy Development and Independence. Project duration: 09/08 – 06/10. \$567,021.
20. Montross, M.D. Studying Ensilability of Corn Stover Harvested Fractions. Idaho National Laboratory. Project duration: 08/07-09/07. \$6,000.
21. Montross, M.D., M.J. Bitzer, C.L. Crofcheck, S.A. Shearer, and C.R. Dillon. Governors Office of Energy Policy. Cultural practices influencing ethanol production from sweet sorghum. Project duration: 10/07 – 06/09. \$98,872
22. S. McNeill, M. Montross, L. Murdock, J. Herbek, J. Martin, D. Hershman, D. Johnson, J. Roberts, B. Caldbeck and J. Hagan. Governors Office of Energy Policy. Canola and sunflower for oil/biofuels production in Kentucky. Project duration: 01/07 – 06/08. \$57,487.
23. Montross, M.D., Bitzer, M.J., C.L. Crofcheck. Storage of sweet sorghum juice for ethanol production. New Crop Opportunities Phase VI. Project duration: \$31,875.
24. R.S. Gates, S.E. Nokes, D.G. Colliver and M.D. Montross. Kentucky Rural Energy Supply Program, C. Metcalf (University of Louisville, \$1,984,000 US Dept of Energy). (subcontract awarded by University of Louisville for competitive grants administration). 2005-2007. \$268,600
25. Montross, M.D., Taulbee, D.N., R.A. Andrews, and S.A. Shearer. Production of biomass briquettes as an alternative fuel source. Special grant from University of Louisville (Department of Energy) for the Kentucky Rural Energy Consortium. Project duration: 01/06 to 06/07. \$125,759. Matching funds of \$35,698 from the Kentucky Office of Energy Policy.
26. Montross, M.D., C.L. Crofcheck, S.A. Shearer, S.E. Nokes, and E. Berson. Development of an ethanol pilot scale facility to evaluate the effect of collection, storage, and pretreatment of corn stover. Special grant from University of Louisville (Department of Energy) for the Kentucky Rural Energy Consortium. Project duration: 01/06 to 06/07. \$173,627. Matching funds of \$46,362 from the Kentucky Office of Energy Policy.
27. Montross, M.D., C.D. Lee, and C.L. Crofcheck. Evaluation of high fermentable corn hybrids in Kentucky. Special grant from USDA-CSREES to the University of Kentucky (New Crop Opportunities). Project duration: 9/05 to 9/07. \$40,170.
28. Nokes, S.E., C.L. Crofcheck, and M.D. Montross. UK renewable energy workshop and webpage. Kentucky Natural Resources Protection Cabinet. 01/05 to 12/05. \$9,890.
29. Shearer, S.A., T.S. Stombaugh, and M.D. Montross. CAN-based precision seed placement and tracking of genetically modified crops. Kentucky Science and Engineering Foundation. Project duration: 09/04 to 08/05. \$14,986.
30. McNeill, S.G., M.D. Montross, T.S. Stombaugh, and S.K. Riggins. Developing and demonstrating identity-preserved protocols for grain production. Special grant from USDA-CSREES to the University of Kentucky (New Crop Opportunities). Project duration: 07/03 to 06/06. \$39,800.
31. Shearer, S.A., M.D. Montross. Mechanical Fractionation of Corn and Wheat Plant Residues for Increased Sugar. Idaho National Laboratory. Project duration: 07/04-07/05. \$58,103.

32. Montross, M.D., T.S. Stombaugh, S.A. Shearer, T.G. Mueller, and S.G. McNeill. Real-time soil sampler and analyzer using near-infrared reflectance. Special grant from USDA-CSREES to the University of Kentucky (Precision Agriculture – Phase IV). Project duration: 07/03 to 06/05. \$59,916.
33. Buschermohle, M., C.R. Patrick, L.O. Pordesimo, S.G. McNeill, D.W. Johnson and M.D. Montross. Integrating IPM strategies in on-farm stored wheat in Tennessee and Kentucky. USDA Southern Region Integrated Pest Management Program. Project duration: 07/03 to 06/05. Amount received: \$29,922.
34. Dillon, C.R., J.P. Fulton, S. Issacs, S.G. McNeill, M.D. Montross, S.A. Shearer, and T.S. Stombaugh. Tracking field operations for economic analysis and identity-preservation. Special grant from USDA-CSREES (Precision Agriculture – Phase IV). Project duration: 07/03 to 07/05. \$112,494.
35. Crofcheck, C.L., S.E. Nokes, M.D. Montross, and S.G. McNeill. Tours of ethanol and biodiesel production facilities and users across Kentucky. Southern States Energy Board. Project duration: 7/04 to 7/05. \$24,412.
36. Montross, M.D., C.L. Crofcheck, and A. Berkovich. Mild solvent extraction of biomass to produce value-added chemicals and materials. Kentucky Science and Engineering Foundation. Project duration: 07/03 to 06/04. \$15,000.
37. McNeill, S.G., M.D. Montross, R. Andrews, and S. VanSickle. Converting soybean oil to hydrogen for fuel cell development. Kentucky Soybean Promotion Board. Project duration: 04/03 to 06/04. \$6,670.
38. Buschermohle, M.L., D.W. Johnson, P.L. Kenkel, C.R. Patrick, L.O. Pordesimo, S.G. McNeill, and M.D. Montross. Integrating IPM Strategies in On-Farm Stored Grain in Tennessee and Kentucky. USDA Southern Region Integrated Pest Management Program. Project duration: 06/01 to 06/02. \$29,735.
39. Montross, M.D. and S.G. McNeill. Use of near-infrared reflectance to determine flour quality. Kentucky Small Grain Growers Association. Project duration: 08/01 to 08/02. \$2,000.
40. Montross, M.D. and S.G. McNeill. Variability of value added components in corn during handling. Kentucky Corn Growers Association. Project duration: 07/00 to 07/01. \$1,500.
41. McNeill, S.G., M.D. Montross, and D.M. TeKrony. Drying, storage and germination characteristics of selected specialty grains. USDA-CSREES through the New Crop Opportunities Center. Project duration: 04/00 to 04/02. \$17,600.
42. McNeill, S.G., C.G. Poneleit, and M.D. Montross. Comparison of two NIR monitors for corn and wheat. Special grant from USDA-CSREES (Precision Agriculture – Phase II). Project duration: 04/00 to 04/02. \$42,352.

#### UK Internal Competition

1. Montross, M.D., C.L. Crofcheck, S.A. Shearer. Laboratory hammer mill for sample preparation. 2004 UK Research Equipment Initiative. \$4,275.
2. Montross, M.D. and C.L. Crofcheck. Equipment for biomass research. 2004 UK Research Equipment Initiative. \$2,275.

3. Montross, M.D., R.S. Gates, S.G. McNeill, G.A. Duncan, and D.G. Overhults. Dew point hygrometers. 2002 UK Major Research Equipment Initiative. \$9,225.
4. Turner, L.W., R.S. Gates, M.D. Montross, F.A. Payne, and L.G. Wells. Instron universal testing machine. 2001 UK Major Research Equipment Initiative. \$26,649.

#### Regional Projects

1. Montross, M.D. and S.G. McNeill. 2001-current. Production, marketing and delivery of quality cereals and oilseeds. Multistate Research Project NC-213.
2. Nokes, S.E., C.L. Crofcheck, and M.D. Montross. 2002-current. The science and engineering for a biobased industry and economy. Multistate Research Project S-1007.

**PUBLICATIONS**

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Refereed Publications

\*Indicates publication by graduate student or visiting scholar/post-doc

1. A.P. Turner\*, M.D. Montross, J.J. Jackson, S.G. McNeill, M.E. Casada, J.M. Boac, R. Bhadra, R.G. Maghirang, S.A. Thompson. 2017. Stored grain surface estimation using a low density point cloud. *Appl. Eng. Ag.* 33(1): 105-112.
2. Bhadra, R., M.E. Casada, S.A. Thompson, J.M. Boac, R.G. Maghirang, M.D. Montross, A.P. Turner, S.G. McNeill. 2017. Field-observed angles of repose for stored grain in the United States. *Appl. Eng. Ag.* 33(1): 131-137.
3. Hickman, A.N, S.E. Nokes, W.S. Sympson, M.J. Ruwaya, M. Montross, B.L. Knutson. 2016. The confounding effects of particle size and substrate bulk density on *Phanerochaete chrysosporium* pretreatment of *Panicum virgatum*. *Bioresources.* 11(3): 7500-7511.
4. Rodrigues Soares\*, C., J.J. Jackson, M.D. Montross. 2016. A Molar Basis Comparison of Calcium Hydroxide, Sodium Hydroxide, and Potassium Hydroxide on the Pretreatment of Switchgrass and Miscanthus Under High Solids Conditions. *Ind. Crops and Prod.* 92: 165-173.
5. Turner\*, A.P., M.D. Montross, J.J. Jackson, S.G. McNeill, M.E. Casada, J.M. Boac, R. Bhadra, R.G. Maghirang, S.A. Thompson. 2016. Error analysis of stored grain inventory determination. *Trans. ASABE.* 59(3): 1061-1072.
6. Turner\*, A.P., M.D. Montross, J.J. Jackson, S.G. McNeill, M.E. Casada, J.M. Boac, R. Bhadra, R.G. Maghirang, S.A. Thompson. 2016. Modeling the Compressibility Behavior of Hard Red Wheat Varieties. *Trans. ASABE.* 59(3) 1029-1038.
7. Jackson\*, J.J., A.P. Turner, T. Mark, M.D. Montross. 2016. Densification of biomass using a pilot scale flat ring roller pellet mill. *Jrnl of Fuel Proc. Tech.* 148: 43-49.
8. Bhadra, R., M.E. Casada, J.M. Boac, A.P. Turner, S.A. Thompson, M.D. Montross, R.G. Maghirang, S.G. McNeill. 2016. Correlating bulk density (with dockage) and test weight (without dockage) for wheat samples. *Appl. Eng. Ag.* 32(6): 925-930.
9. Boac, J., R. Bhadra, M.E. Casada, S.A. Thompson, A.P. Turner, M.D. Montross, S.G. McNeill, R.G. Maghirang. 2015. Stored grain pack factors for wheat: comparison of three methods to field measurements. *Trans ASABE* 58(4): 1089-1101.
10. Bhadra, R., A.P. Turner, M.E. Casada, M.D. Montross, S.A. Thompson, J.M. Boac, S.G. McNeill, R.G. Maghirang. 2015. Pack factor measurements for corn in grain storage bins. *Trans ASABE.* 58(3): 879-890.
11. Martinez-Martinez, V., Gomez-Gil, J., Stombaugh, T.S., Montross, M.D., Aguiar, J.M. 2015. Moisture content prediction in switchgrass (*Panicum virgatum*) drying process using artificial neural networks. *Drying Tech.* 33(14): 1708-1719.
12. Crofcheck, C., Shea, A., Montross, M., Crocker, M., and Andrews, R. 2013. Influence of media composition and flue gas components on the growth rate of *Chlorella vulgaris* and *Scenedesmus acutus* utilized for carbon dioxide mitigation. *Trans. ASABE.* 56(6): 1421-1429.

13. Crofcheck, C., E. X., Shea, A., Montross, M., Crocker, M., Andrews, R. 2012. Influence of media composition on the growth rate of *Chlorella vulgaris* and *Scenedesmus acutus* utilized for CO<sub>2</sub> mitigation. *J. Biochem. Tech.* 4(2): 589-594.
14. Montross, M.D., S. DeBolt, W.C. Adams. 2013. Interplay between yield, nitrogen application, and logistics on the potential energetic and greenhouse gas emissions from biomass crops. *Global Change Biology Bioenergy.* 5(6): 664-673.
15. Nascimento\*, J.W.B., Lopes, N.J.P., Montross, M.D. 2013. Horizontal pressures in cylindrical metal silos and comparison with different international standards. *Engenharia Agricola.* 33(4): 601-611.
16. Duguid\*, K.B., M.D. Montross, C.W. Radtke, C.L. Crofcheck, L.M. Wendt, and S.A. Shearer. 2009. Effect of anatomical fractionation on the enzymatic hydrolysis of acid and alkaline pretreated corn stover. *Biores. Tech.* 100 (21): 5189-5195.
17. Debolt, S., Campbell, J.E., Smith, R., Montross, M., Stork, and J. Jozsef, S. 2009. Life cycle assessment of native plants and marginal lands for bioenergy agriculture in Kentucky as a model for south-eastern USA. *Global Change Biology.* 1(4): 308-316.
18. Stork, J., Montross, M., Smith, R., Schwer, L, Chen, W., Reynolds, M., Phillips, T., Coolong, T., Debolt, S. 2009. Regional examination shows potential for native feedstock options for cellulosic biofuel production. *Global Change Biology* 1(3): 230-239.
19. Molenda\*, M., M.D. Montross, S.A. Thompson, and J. Horabik. 2009. Asymmetry of model bin wall loads and lateral pressure induced from two- and three-dimensional obstructions attached to the wall. *Trans. ASABE.* 52(1): 225-233.
20. Łukaszuk\*, L., M. Molenda, J. Horabik, M.D. Montross. 2009. Variability of pressure drops in grain generated by kernel shape and bedding method. *Journal of Stored Products Research* 45(1): 112-118.
21. Fan, Z., K. Wagschal, W. Chen, M.D. Montross, C.C. Lee, and L. Yuan. 2009. Multimeric hemicellulases facilitate biomass conversion. *Applied and Environmental Microbiology.* 75(6): 1754-1757.
22. McNeill, S.G., M.D. Montross, S.A. Thompson, I.J. Ross, and T.C. Bridges. 2008. Packing factors of feed products in storage structures. *Appl. Eng. in Agric.* 24(5): 625-630.
23. Łukaszuk, L., M. Molenda, J. Horabik, B. Szot, M.D. Montross. 2008. Airflow resistance of wheat bedding as influenced by the filling method. *Res. Agr. Eng. (ISSN 1212-9151).* 54(2): 50-57.
24. Molenda\*, M., M.D. Montross, J. Horabik. 2007. Non-axial stress state in a model silo generated by eccentric filling and internal inserts. *Part. & Part. Syst. Charact.* 24(4-5): 291-295.
25. Duguid\*, K.B., M.D. Montross, C.W. Radtke, C.L. Crofcheck, S.A. Shearer, R.L. Hoskinson. 2007. Screening for sugar and ethanol processing characteristics from anatomical fractions of wheat stover. *Biomass and Bioenergy.* 31(8): 585-592
26. Prewitt\*, R.M., M.D. Montross, S.G. McNeill, T.S. Stombaugh, S.A. Shearer, S.F. Higgins, and S. Sokhansanj. 2007. Corn stover availability and collection efficiency using typical hay equipment. *Trans. ASAE.* 50(3): 705-711.
27. Molenda\*, M., M.D. Montross, and J. Horabik. 2007. Performance of earth pressure cell as grain pressure transducer in a model silo. *Int. Agrophysics.* 21(1): 73-79.

28. Molenda\*, M., M.D. Montross, S.A. Thompson, and J. Horabik. 2006. Vertical loads from wheat on obstructions located on the floor of a model bin. *Trans. ASAE*. 49(6): 1855-1865.
29. Montross, M.D., G.A. Duncan, and R.S. Gates. 2006. Development and testing of a low-cost condensation detection system. *Appl. Eng. Agric.* 22(4): 603-608.
30. Crofcheck, C.L. and M.D. Montross. 2006. Evaluation of Fourier Transform Infrared Spectroscopy measurements of glucose and xylose in biomass hydrolyzate. *Appl. Eng. In Agric.* 22(3): 415-420.
31. McNeill, S.G., M.D. Montross, and S.A. Shearer. 2005. Spatial variation of protein and oil in yellow corn. *Appl. Eng. in Agric.* 21(4): 619-625.
32. Molenda\*, M., M.D. Montross, J. Horabik, and S.G. McNeill. 2005. Airflow resistance of seeds at different bulk densities using Ergun's equation. *Trans. ASAE*. 48(3): 1137-1145.
33. Montross, M.D. and S.G. McNeill. 2005. Permeability of corn, soybeans, soft red and white wheat as affected by bulk density. *Appl. Eng. Agric.* 21(3): 479-484.
34. Crofcheck, C.L., M.D. Montross, A. Berkovich, and R.J. Andrews. 2005. The effect of temperature on the mild solvent extraction of white and red oak. *Biomass and Bioenergy*. 28(6): 572-578.
35. Bridges, T.C., M.D. Montross, and S.G. McNeill. 2005. Estimation of costs associated with aeration of wheat in the mid-South region of the United States. *Appl. Eng. in Agric.* 21(1): 115-124.
36. Molenda\*, M., M.D. Montross, J. Horabik, and S.A. Thompson. 2004. Vertical wall loads in a model grain bin with non-axial internal insertions. *Trans. ASAE*. 47(5): 1681-1688.
37. Montross, M.D., S.G. McNeill, and T.C. Bridges. 2004. Seasonal aeration rates for the Eastern United States based on long-term weather patterns. *Appl. Eng. in Agric.* 20(5): 665-669.
38. McNeill, S.G., S.A. Thompson, and M.D. Montross. 2004. Effect of broken corn and fine material on the compressibility of corn. *Appl. Eng. in Agric.* 20(4): 475-480.
39. Crofcheck, C.L. and M.D. Montross. 2004. Effect of stover fraction on glucose production using enzymatic hydrolysis. *Trans. ASAE*. 47(3): 841-844.
40. Montross, M.D. and C.L. Crofcheck. 2004. Effect of stover fraction and storage method on glucose production rates during enzymatic hydrolysis. *Bioresource Technology* 92(3): 269-274.
41. Molenda\*, M., M.D. Montross, J. Horabik, and I.J. Ross. 2002. Mechanical properties of granular feed ingredients. *Trans. ASAE* 45(6): 1929 - 1936.
42. Montross, M.D., D.E. Maier, and K. Haghghi. 2002. Development of a new finite element stored grain ecosystem model. *Trans. ASAE*. 45(5): 1455 - 1464.
43. Montross, M.D., D.E. Maier, and K. Haghghi. 2002. Validation of a new finite element stored grain ecosystem model. *Trans. ASAE*. 45(5): 1465 - 1474.
44. Molenda\*, M., J. Horabik, I.J. Ross, and M.D. Montross. 2002. Friction of wheat: grain-on grain and on corrugated steel. *Trans. ASAE*. 42(2): 415 - 420.
45. Arthur, F.H., J.E. Throne, D.E. Maier, and M.D. Montross. 2001. Impact of aeration on maize weevil (*Coleoptera: Curculionidae*) populations in corn stored in the northern United States: simulation studies. *American Entomologist*. 47(2): 104 - 110.

46. Montross, M.D. and D.E. Maier. 2000. Reconditioning corn and soybeans to optimal processing moisture contents. *Appl. Eng. Agric.* 16(5): 527 – 535.
47. Montross, M.D. and D.E. Maier. 2000. Simulated performance of conventional high-temperature drying, dryeration, and combination drying of shelled corn with automatic conditioning. *Trans. ASAE.* 43(3): 691 - 699.
48. Montross, M.D., F.W. Bakker-Arkema, and R.E. Hines. 1999. Moisture content variation and grain quality of corn dried in different high-temperature dryers. *Trans. ASAE* 42(2): 427 – 433.
49. Arthur, F.H., J.E. Throne, D.E. Maier, and M.D. Montross. 1998. Feasibility of aeration for management of maize weevil populations in corn stored in the southern United States: Model simulations based on recorded weather data. *American Entomologist.* 44(2): 118 - 123.
50. Widayat, H.P., F.W. Bakker-Arkema, M.D. Montross, and R.E. Hines. 1998. Top-bin/In-bin counterflow drying of paddy. *Agricultural Mechanization in Asia, Africa and Latin America.* 29(3): 63 - 66.
51. Montross, M.D., J.E. Montross, F.W. Bakker-Arkema, and R.E. Hines. 1997. Dryer performance enhancement through grain preheating. *Trans. ASAE* 40(5): 1391 - 1394.
52. Liu, Q., M.D. Montross, and F.W. Bakker-Arkema. 1997. Stochastic modeling of gain drying: Part 1. Experimental Investigation. *J. Agric. Eng. Res.* 66: 267 - 273.
53. Liu, Q., M.D. Montross, F.W. Bakker-Arkema, and R.E. Hines. 1997. Frozen water content in maize at low temperatures and its effect on dryer performance. *Drying Technology.* 15(3&4): 939 - 948.

### Patents

1. Nokes, S.E., B.C. Lynn, S. Rankin, B. Knutson, M.D. Montross, M. Flythe. 2016. On-farm processing a biomass feedstock involves delignifying feedstock; subjecting it to cellulase production and to simultaneous cellulolytic and solventogenic reaction and collecting industrial chemicals from fermentation broth. Patent Application Number 20140329285.
2. Posselius, J.H., C.A. Foster, E.H. Priepke, K.M. Smith, S.A. Shearer, M.D. Montross, W.C. Adams. 2013. Baler e.g. round baler for consolidating and packaging crop material e.g. hay, has compression assembly which is set to crush crop material passed through assembly, and bale chamber within which crushed crop is set to form bale. Patent Number EP2540152-A1; US2013000497-A1.

### Book Chapters

1. Montross, M.D. and C.L. Crofcheck. Energy Crops for the Production of Biofuels. In Mark Crocker (ed.), *Thermochemical Conversion of Biomass to Liquid Fuels and Chemicals.* Royal Society of Chemistry, 2010. p. 26-46.
2. Bucklin, R.A., S. Thompson, A. Abdel-Hadi, M. Montross. Grain Storage Systems Design. In Myer Kutz. *Handbook of Farm, Dairy, and Food Machinery.* William Andrew Publishing, Norwich, NY, 2007. p. 113-162.
3. Montross, J.E., Montross, M.D., Bakker-Arkema, F.W. Grain storage. In: Bakker-Arkema, F. W. (ed.). *CIGR handbook of agricultural engineering.* St. Joseph: ASAE, 1999. v.4, p.46-59.

Extension Publications

1. McNeill, S.G., M.D. Montross. 2015. Harvesting, drying, and storing wheat. In: Organic Corn Production in Kentucky. University of Kentucky Cooperative Extension Service ID-225.
2. Crofcheck, C., T. Graham, M. Montross. 2013. Algae-Based CO<sub>2</sub> Mitigation for Coal-Fired Power Plants. University of Kentucky Cooperative Extension Service AEN-116.
3. Montross, M., S. McNeill. 2012. Handling US corn in Southeast Asia. Asian Feed. July 2012.
4. Stombaugh, T., M. Montross, S. Nokes, K. Gray. 2012. Butanol: the new biofuel. University of Kentucky Cooperative Extension Service. AEN-111.
5. Stombaugh, T., M. Montross, S. Nokes, W. Adams. 2012. A new concept in on-farm biofuel production. University of Kentucky Cooperative Extension Service. AEN-112.
6. McNeill, S.G. and M.D. Montross. 2009. Harvesting, drying, and storing wheat. In: Wheat Production in Kentucky. University of Kentucky Cooperative Extension Service ID-125.
7. McNeill, S.G. and M.D. Montross. 2009. Harvesting, drying, and storing corn. In: Corn Production in Kentucky. University of Kentucky Cooperative Extension Service ID-139.
8. Colliver, D., J. Bush, A. Davis, M. Montross, R. Fehr, R. Gates, G. Halich and S. Nokes. 2008. Kentucky resources to meet energy needs of the 25x'25 Initiative. Agricultural Engineering Update AEU-94. University of Kentucky, College of Agriculture.
9. Crofcheck, C., T. Stombaugh, and M. Montross. 2006. Biodiesel basics. University of Kentucky Cooperative Extension Service AEN-89.
10. Stombaugh, T., C. Crofcheck, and M. Montross. 2006. Biodiesel FAQ. University of Kentucky Cooperative Extension Service AEN-90.
11. Duncan, G.A., R.S. Gates, and M.D. Montross. 2005. Measuring relative humidity in agricultural environments. University of Kentucky Cooperative Extension Service AEN-87.
12. McNeill, S.G. and M.D. Montross. 2003. Harvesting, Drying and Storing Grain Sorghum. University of Kentucky Cooperative Extension Service AEN-17.
13. Maier, D.E. and M.D. Montross. 2002. Reconditioning overly dry soybeans. Grain Quality Fact Sheet #48. Purdue Cooperative Extension Service. W. Lafayette, IN.
14. McNeill, S.G. and M.D. Montross. 2001. Harvesting, drying, and storing corn. In: Corn Production in Kentucky. University of Kentucky Cooperative Extension Service ID-139.
15. Maier, D.E. and M.D. Montross. 1998. Conditioning soybeans to optimize market moisture. August/September. Feed and Grain. Pg 14 – 18.
16. Maier, D.E. and M.D. Montross. 1998. Aeration system design: Air distribution systems. February. Feed and Grain. Pg 46 –49.
17. Maier, D.E. and M.D. Montross. 1998. Aeration system design: Air distribution systems Part II. April. Feed and Grain. Pg 30 - 37.
18. Maier, D.E. and M.D. Montross. 1997. Aeration system design - Part I: The fundamentals. February/March Feed and Grain. Pg 50 – 53.
19. Maier, D.E. and M.D. Montross. 1997. Aeration system design - Part I: The fundamentals continued. April/May. Feed and Grain. Pg 68 – 71.

20. Maier, D.E. and M.D. Montross. 1997. Aeration system design - Part II: Fan selection and sizing. June/July Feed and Grain.
21. Maier, D.E. and M.D. Montross. 1997. Aeration system design - Part IV: Fan selection and sizing. August. Feed and Grain. Pg 56 - 58.

## GRADUATE STUDENTS AND COMMITTEES

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### Graduate Students - Current

1. Aaron Turner. Ph.D. student (co advised with Michael Sama). Biosystems and Agricultural Engineering. Expected graduation date 12/18.

### Graduate Student Committee - Current

1. Hasan Seyyedhasani. Ph.D. student. Dissertation topic: Route planning for multiple vehicles. Expected graduation date 06/18.
2. Ali Hamidisepehr. Ph.D. student. Dissertation topic: Estimating soil moisture using reflectance-based remote sensing. Expected graduation date 12/18.
3. Joseph Rounsaville. Ph.D. student Dissertation topic: Electrification potential of tractors for organic production. Expected graduation date 06/17.
4. Francis Agbali. Ph.D. student. Dissertation topic: Drying and storage of corn in Nigeria. Expected graduation date 06/18.

### Graduate Students - Completed

1. Drew Schiavone. Ph.D. Heat and mass transfer in baled switchgrass for storage and bioconversion applications. Graduation date 05/16.
2. Jackson, Joshua, Ph.D. Optimal uses of biomass resources in distributed applications. Graduation date 08/15.
3. Hagan, Michael, Life cycle assessment of biomass harvesting for on-farm biofuel production. M.S. Graduation date 06/15.
4. Koeninger, Nicole, M.S. Determining soil erosion with varying corn stover cover factors. Graduation date 06/15.
5. Rodrigues, Carla, M.S. Evaluation of different sources of hydroxyl on biomass pretreatment and hydrolysis. Graduation date 06/15.
6. Turner, Aaron, M.S. Laboratory scale concept validation and evaluation of compromising plant nodal integrity as a means to increase bale density. Graduation date 06/14.
7. Maira Amaral, Ph.D. Quantification of algal growth in manure based media. Graduation date 08/12.
8. George Day (co-advised with Joe Ross), Ph.D. Biosystems and Agricultural Engineering. Granular mechanics formulary for soft red winter wheat in corrugated storage bins. Graduation Date 06/05.
9. Peng Li. (co-advised with Rich Gates), M.S. Biosystems and Agricultural Engineering. Evaporation from indoor shrimp production facilities. Graduation Date 06/08.
10. Blair Duguid (co-advised with Scott Shearer), M.S. Biosystems and Agricultural Engineering. Mechanical fractionation of corn and wheat plant residues for increased sugar recovery. Graduation Date 06/06.
11. Jason Ward, M.S. Biosystems and Agricultural Engineering. Development of an on-vehicle controller area network for data acquisition. Graduation Date 12/04.

12. Cameron Courtney, M.S. Biosystems and Agricultural Engineering. Packing of soft red winter wheat. Graduation Date 12/04.
13. Dan Stangeland, M.S. Biosystems and Agricultural Engineering. Use of near-infrared reflectance to evaluate soil properties. Graduation Date 05/04.

#### Graduate Student Committees - Completed

1. Manjot Singh. MS. Biosystems and Agricultural Engineering. Graduated 2016.
2. Danielle Empson. MS. Biosystems and Agricultural Engineering. Graduated 2016.
3. Nick Rhea. MS. Biosystems and Agricultural Engineering. Graduated 2016.
4. William Sympson. Biosystems and Agricultural Engineering. Graduated 2016.
5. Jenifer Frederick. Ph.D. Grain Science and Industry, Kansas State University. Graduated 2016.
6. Caoli Zheng. M.S. Biosystems and Agricultural Engineering. Graduated 2015.
7. Amanda Hickman. M.S. Biosystems and Agricultural Engineering. Graduated 2015.
8. Evan Simon. M.S. Biosystems and Agricultural Engineering. Graduated 2015.
9. Bobby Carey. M.S. Biosystems and Agricultural Engineering. Graduated 2014.
10. Noelia Elia. M.S. Biosystems and Agricultural Engineering. Graduated 2014.
11. Katharyn Gray. M.S. Biosystems and Agricultural Engineering. Graduated 2013.
12. Tabitha Graham. M.S. Biosystems and Agricultural Engineering. Graduated 2013.
13. Michael Sama. Ph.D. Biosystems and Agricultural Engineering. Graduated 2013.
14. Xinyi E. Ph.D. Biosystems and Agricultural Engineering. Graduated 2013.
15. Alicia Modenbach. Ph.D. Biosystems and Agricultural Engineering. Graduated 2013.
16. Jason Ward. Ph.D. Biosystems and Agricultural Engineering. Mississippi State University. Graduated 2013.
17. Samuel Mullins. M.S. Biosystems and Agricultural Engineering. Graduated 2012.
18. Sarah Short. M.S. Biosystems and Agricultural Engineering. Graduated 2012.
19. Keelin Cassidy. M.S. Biosystems and Agricultural Engineering. Graduated 2011.
20. Thomas Niehaus. 2011. Outside Examiner, Ph.D., Plant Sciences.
21. Federica Galli. 2007. Outside Examiner, Ph.D., Plant Physiology.
22. James Link Shumaker. M.S. Biosystems and Agricultural Engineering. Graduated 2007.
23. Courtney Fisk. M.S. Biosystems and Agricultural Engineering. Graduated 2007.
24. Matthew Veal. Ph.D. Biosystems and Agricultural Engineering. Graduated 2006.
25. Dinesh Garg. M.S. Agricultural and Biological Engineering, Purdue University. Graduated 2005.
26. Chris Reilly, M.S. Biosystems and Agricultural Engineering. Graduated 2005.
27. Lee Sisk, M.S. Biosystems and Agricultural Engineering. Graduated 2005.
28. Mary Grace Danao, M.S. Biosystems and Agricultural Engineering. Graduated 2001.

**TEACHING**

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Course Descriptions*BAE 201 Economic Analysis for Biosystems (2)*

The financial and managerial aspects of biosystems in evaluating design alternatives. Typical topics included are: concepts of present and future value, techniques of managerial economics, and biosystem design analysis in the evaluation of alternatives. Retirement/replacement policies and risk analysis. Prereq: MA 113.

*BAE 447 Bioprocess Engineering Fundamentals (3)*

Design principles and equipment selection for the most common processing operations are studied for the manufacturing and preservation of biological materials. Topics will include the design of fluid flow systems, transient heat transfer, heat exchangers, psychometrics, and refrigeration. Prereq: BIO 148 and BIO 152; prereq or concur with ME 325.

*BAE 502 Modeling of Biological Systems (3)*

The course will focus on the mathematical description and computer simulation of the complex interactions involved in biological systems. Computer simulation will be used as a tool to analyze and suggest design changes to optimize performance. Prereq: BAE 402.

On-Line Course Evaluations

Course	Title	Term	# Responses /# Students	Course    Teaching <sup>1</sup>
BAE 201	Economic Analysis of Biosystems	F 16	35/55	3.17/3.82    2.94/4.17
BAE 201	Economic Analysis of Biosystems	F 15	49/68	3.10/3.29    2.85/3.40
BAE 447	Bioprocess Eng. Fundamentals	F 16	11/25	3.73/3.82    3.82/4.17
BAE 447	Bioprocess Eng. Fundamentals	F 15	16/28	3.06/3.29    2.50/3.40
BAE 502	Modeling of Biological Systems	S 16	20/35	3.40/3.35    3.15/3.48
BAE 502	Modeling of Biological Systems	S 15	10/15	3.53/3.36    3.67/3.45

<sup>1</sup>Score for course/average for College || Score for instruction/average for College

Paper Evaluations

Course	Title	Term	# Students	Course/Teaching <sup>1</sup>
BAE 201	Economic Analysis of Biosystems	F 14	36	3.4/3.3
BAE 201	Economic Analysis of Biosystems	F 13	37	3.6/3.5
BAE 201	Economic Analysis of Biosystems	F 12	28	3.4/3.5
BAE 201	Economic Analysis of Biosystems	F 11	41	3.5/3.7
BAE 201	Economic Analysis of Biosystems	F 10	16	3.4/3.7
BAE 201	Economic Analysis of Biosystems	F 09	11	3.6/3.8
BAE 201	Economic Analysis of Biosystems	F 08	21	3.6/3.8
BAE 201	Economic Analysis of Biosystems	F 07	9	3.4/3.4
BAE 201	Economic Analysis of Biosystems	F 06	21	3.9/3.9
BAE 201	Economic Analysis of Biosystems	F 05	21	3.8/3.8
BAE 201	Economic Analysis of Biosystems	F 04	19	3.8/3.9
BAE 201	Economic Analysis of Biosystems	F 03	19	3.3/3.4
BAE 201	Economic Analysis of Biosystems	F 02	28	3.5/3.4

BAE 201	Economic Analysis of Biosystems	F 01	15	2.8/2.9
BAE 427	Structures and Environment Eng.	S 13	14	3.1/3.5
BAE 427	Structures and Environment Eng.	S 12	11	3.9/3.8
BAE 427	Structures and Environment Eng.	S 11	11	3.8/3.8
BAE 427	Structures and Environment Eng.	S 10	15	3.8/3.8
BAE 427	Structures and Environment Eng.	S 09	7	3.7/3.6
BAE 447	Bioprocess Eng. Fundamentals	F 14		
BAE 447	Bioprocess Eng. Fundamentals	F 13	22	3.8/3.7
BAE 447	Bioprocess Eng. Fundamentals	F 12	12	3.8/3.9
BAE 447	Bioprocess Eng. Fundamentals	F 11	9	4.0/3.9
BAE 447	Bioprocess Eng. Fundamentals	F 10	18	3.7/3.8
BAE 447	Bioprocess Eng. Fundamentals	F 09	13	3.7/3.9
BAE 447	Bioprocess Eng. Fundamentals	F 08	12	3.8/3.9
BAE 447	Bioprocess Eng. Fundamentals	F 07	15	3.5/3.9
BAE 450	Computational Tools Biosystems Eng.	S 09	8	Not rated
BAE 450	Computational Tools Biosystems Eng.	S 08	8	Not rated
BAE 599	Lifecycle Assessments for Bio. Eng.	S 15		
BAE 599	Lifecycle Assessments for Bio. Eng.	S 14		In progress
BAE 599	Lifecycle Assessments for Bio. Eng.	S 13	9	3.7/3.8
BAE 599	Lifecycle Assessments for Bio. Eng.	S 12	12	3.9/4.0
BAE 599	PC Data Acquisition and Control	S 03	8	2.6/2.6
BAE 599 <sup>2</sup>	PC Data Acquisition and Control	F 01	4	Not rated
BAE 599	PC Data Acquisition and Control	F 00	6	2.7/2.5
BAE 658 <sup>3</sup>	Instrumentation for Eng. Research	S 01	6	3.2/2.7
BAE 750	Applied Finite Element Analysis	S 06	4	Not rated
BAE 750	Applied Finite Element Analysis	S 05	11	Not rated
BAE 750	Applied Finite Element Analysis	S 03	9	3.0/2.7
BAE 775	Seminar <sup>4</sup>	F 12	12	Not rated

<sup>1</sup>Out of maximum possible of 4.0

<sup>2</sup>Team taught with Dr. T.S. Stombaugh – responsible for approximately 50% of lectures and labs

<sup>3</sup>Team taught with Dr. R.S. Gates - responsible for approximately 50% of lectures and labs

<sup>4</sup>Team taught with Dr. D. Edwards - responsible for approximately 50% of lectures and labs

### SERVICE TO STUDENTS

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- ASAE student Branch Advisor, 2000 - 2001. (Assisted undergraduate students with organizing meetings, activities, fundraising, and regional meeting attendance).
- Alpha Epsilon Advisor, 2002 - 2003. (Helped graduate students organize meetings, activities, and fundraising).

### RECRUITING

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- Assisted students in presenting displays for the E-day Open House during Engineer's Week. 2001 – 2006, 2008 - 2013.
- Took students to ASABE Midwest Rally (Madison, WI 02/08).
- COE academic fair (09/07)
- Travelled with students to ASAE SE Regional Rally (Auburn, AL 03/07).
- College of Engineering Academic Fair (10/13 and 10/14/06).
- Took students to the ASAE Midwest regional rally. 03/04. Food processing presentation to 4-H students and teachers. 06/03.
- BAE department research and projects overview for EGR 101. 06/03.

- Research overview for students from Turner Academy, Breathitt County. 06/03.
- Judge for engineering day for the East and West Jessamine County High School on 12/01.
- Participated in the College of Agriculture's Ag Roundup during 2000 and 2001.
- Gave tours to East and West Jessamine County Engineering Club, October 2001.
- Departmental booth at the state fair during 2001 and 2004.
- Took students to the ASAE Southeast regional rally. 03/01 and 04/03.

#### **TEACHING SEMINARS AND WORKSHOPS ATTENDED**

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- Attended a workshop by the College of Agriculture on Distance Learning. 05/11.
- USDA Southern Region Teaching Workshop on service learning presented by Marybeth Lima, Louisiana State University. 08/09 to 08/10/05.
- Attended a seminar sponsored by the College of Agriculture - "Critical thinking in the classroom" presented by Rick Rudd (Professor, University of Florida). 07/04.
- Continuous Quality Improvement for departmental accreditation. Campbellsville, KY. July 15-16, 2003.
- Attended a workshop by the College of Agriculture - "The lecture as a teaching and learning method" from Mike Mullen (Professor in Agronomy). 03/03.
- Attended a workshop by the Teaching and Learning Center - "Teaching Portfolio Preparation" presented by Larry Grabau (Professor in Agronomy). 09/01.

## **SERVICE**

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### International

- Traveled to Jakarta, Indonesia and Kuala Lumpur, Malaysia to present seminars on corn storage and site visits of grain facilities for US Grains Council from June 19-July 1, 2012.
- Traveled to Jakarta, Indonesia and Kuala Lumpur, Malaysia to present seminars on corn storage and site visits of grain facilities for US Grains Council from October 15-23, 2011.
- Traveled to Hanoi and Ho Chi Minh City, Vietnam to present seminars on corn storage and site visits of grain facilities for US Grains Council from April 15-23, 2011.
- Traveled to Manila, Philippines, Hanoi and Ho Chi Minh City, Vietnam to present seminars on corn storage and site visits of grain facilities for US Grains Council from December 12-21, 2008.
- Conducted seminars and site visits on "Storage of US corn in tropical regions" for US Grains Council in three countries (Vietnam, Malaysia, and the Philippines) from September 10 - 22, 2004.
- Travel to Universidade Federal de Viçosa and Universidade Federal de Lavras for presentations and collaborations with Brazilian researchers. 06/04.
- Travel to Universidade Federal de Viçosa and Universidade Federal de Lavras for presentations and collaborations with Brazilian researchers. Brazil. 03/02.

### National

- Finance committee member for ASABE (2011-present)
- Reviewed manuscripts for:
  - Applied Biochemistry and Biotechnology
  - Transactions of ASAE/ASABE
  - Applied Engineering in Agriculture
  - Book chapters for AACC
  - Biotechnology Progress
  - Biomass and Bioenergy
  - Polish Journal of Food and Nutrition Science
  - Bioresource Technology
  - Industrial Crops and Products
- NC-213, (2000 – present), objective co-chair (02/03 – present), secretary (02/04 – 02/05), chair (02/06-02/07).
- ASAE, FPE-702 Grain and Feed Processing and Storage (1998 – present), program chair (07/04-07/06), chair (07/06-07/07).
- ASAE, SE-202 Bulk Solids Storage Systems (2001 - present), Vice-Committee chair (2003), program chair (2006)
- ASAE, PM-23/7/2 Forage and Biomass Engineering (2004-present).
- ASAE, FPE-709 Biomass Energy and Industrial Products (2006-present).

Review Panels/Site Visits

- US DOE Review Panel Advanced Biomass Feedstock Logistics (2013)
- Proposal review for Global Institute for Food Security, University of Saskatchewan (2014)
- Reviewer for South Central Sun Grant (2012)
- NSF/SBIR review panel (03/08/2011)
- DOE/SBIR reviewer (02/05/2010)
- Review panel for USDA/DOE Biomass Research Initiative Preproposals (5/20-5/24/10)
- Review panel for DOE Integrated Biorefinery Review (8/31-9/4/10 and 9/14-9/18/10)
- Review panel for DOE Ethanol Infrastructure (11/10-11/13/10)
- Review panel for USDA/DOE full proposals on biomass and bioenergy (Denver, CO, January 7-10, 2008)
- Review panel for USDA/DOE preapplications on biomass and bioenergy (Washington, DC Aug. 7-10, 2007)
- Site reviews of USDA-DOE biomass grants (Clemson University, 2005 and University of Minnesota, 2006).
- Ad-hoc reviewer of Discovery Grant proposals for Natural Sciences and Engineering Research Council of Canada. 2005.
- Reviewed Anderson Research Grant Proposals for NC-213 (2005).
- Reviewed Precision Agriculture Special Grants (2001).

College

- Reviewer for Kentucky Governor's Office on Ag Policy Energy Efficiency/Renewable Energy grants (quarterly since 2011)
- University Appeals Committee for Annual Performance Reviews (2014)
- Chair of College of Agriculture, Food and Environment committee on promotion and tenure (2013-2014)
- Member of College of Agriculture, Food and Environment appeal committee for annual merit evaluation (2013-2014)
- Chair of C. Oran Little Research Center Users committee (2010-2012)
- Member of College of Agriculture Faculty Council (2008-2009)
- Assisted with technical analysis of 25x25 for Kentucky (2007-2008)

Departmental

- Promotion and tenure committee (2016 – current).
- Undergraduate curriculum and course committee (2000 – 2005, 2011-2015).
- Graduate studies committee (2000 – current).
- Computer committee (2000 - current).
- Seminar committee (chair 2003, 2004).

Society Membership

- American Society of Agricultural and Biological Engineers (ASABE)

### Visiting Scientists

- Byoung-Min Choi. 2001. Sunchon National University. One year sabbatical working with Dr. McNeill and I on equilibrium moisture content and thin-layer drying behavior of specialty grains.
- Marek Molenda. 10/00 to 12/00, 10/01-12/01, 10/02-12/02, 10/03-12/03, and 10/04-12/04. Polish Academy of Sciences, Institute of Agrophysics in Lublin. Granular mechanics research.
- Wallace Nascimento. 12/05 to 01/07. Universidade Federal de Campina Grande, Campina Grande, PB, Brazil. Granular mechanics research.

### **EXTENSION MEETINGS, OTHER PRESENTATIONS, AND PROFESSIONAL DEVELOPMENT EVENTS**

#### Extension Meetings

##### *Grain Quality/Drying*

- Presented on grain drying Woodford County Crop and Livestock Field Day (10/4/12).
- Developed lectures for online distance learning course sponsored by Grain Elevator and Processing Society and Kansas State University on grain drying fundamentals (2011).
- Booth on energy efficiency and energy audits at the National Farm Machinery Show, Louisville, KY February 16-17, 2011.
- Presentations on grain storage [Wayne (2009), Taylor (2009), Henderson (2010), and Logan (2010), Tri-County Grain Day (2011)].
- Presentation at Southern States Growmaster Program, January 30, 2008 Lexington, KY on stored grain management.
- Presentation at UK Grain Crops Academy Princeton, KY. February 6, 2008.
- National Farm Machinery Show Exhibit. Use of NIR technology for grain quality analysis. 02/02. Louisville, KY.

##### *Renewable Energy*

- Bracken County Biomass Field Day (10/17/12).
- Display at Quicksand Field Day (9/22/12).
- Presentation to KY Farm Bureau Energy and Transportation Advisory Committee on on-farm biomass processing (09/06/11).
- Princeton Field Day display on energy (2005, 2007, 2009, 2011) and Robinson Station Field Day (2010).
- Presentations on energy in Bracken (6/22/10), Hardin (8/29/10), Estill (9/30/10), Quicksand (10/2/10), and Logan County (Interim Joint Committee on Agriculture 9/8/10).
- Presentations at the Biofuels Short Course sponsored by the Center for Applied Energy Research (West Liberty, KY 2010).
- Agent training on biofuels (Louisville, KY 12/2/09) and Logan County (10/28/10).
- Report and presentation to Kentucky Executive Task Force on Biomass and Biofuels Development in Kentucky. (2009).
- Conducted agent training sessions for County Agricultural agents on renewable energy basics (January 24, February 1, and February 5, 2008).
- Presented at three county meetings related to renewable energy (Spindletop, Grant, and Spencer County - 2008).

- Presentations at the Biofuels Short Course sponsored by the Center for Applied Energy Research. Aug 14-15, 2008.
- Agent training on biofuels (1/24, 2/1, and 2/5/08). Presentation on biofuels at the Kentuckiana Crop Production Seminar. 12/08.
- Producer meetings in Henderson and Princeton, KY on Farm Biofuels Conference. 12/08.
- Displays on renewable energy production at 2008 National Farm Machinery Show (Louisville, KY)
- Presentation to Kentucky Farm Bureau subcommittee on Energy and Transportation (2006).
- National Farm Machinery Show Exhibit. Corn Stover as an Ethanol Feedstock. 02/03. Louisville, KY.

#### Other Presentations

- Presentation to Association of Grain Regulatory Officials on development of new packing factors, Frankenmuth, MI. (2013).
- Display at National Farm Machinery Show in Louisville, KY on Packing factors during grain storage (2013).
- Display at National Farm Machinery Show in Louisville, KY on on-farm biomass processing (2012)
- Presentation at Agricultural Equipment Technology Conference on “Influence of collection method on the sugar and ethanol processing characteristics from corn stover”, Louisville, KY (02/11/08).
- Presentation at AIChE - Influence of collection method on the sugar and ethanol processing characteristics from corn stover. Salt Lake City, UT, Nov. 6-8, 2007.
- Booth at UK Sustainability fair (2007 and 2009)
- Horticulture seminar – Cellulosic ethanol production (10/07)
- Presentation of poster at the 29th Symposium on Biotechnology for Fuels and Chemicals. Denver, CO. 5/07.
- Seminar in Plant and Soil Sciences on Ethanol Production (03/07)
- Presentation at NC-213 meeting on effect of hybrid on ethanol production (02/07)
- Presentation of two posters (Effect of Fertility Management on Composition of Plant Fractions from Wheat, Corn Stover Quantity and Composition as Influenced by Agronomic Practices) at the 27th Symposium on Biotechnology for Fuels and Chemicals. Denver, CO. 5/05.
- Lecture in ASM 591G at Purdue University on modeling of high-temperature grain dryers. 04/05.
- Presentation on "Modeling non-uniform airflow in grain bins using Ergun's equation" at the 2004 International Quality Grains Conference. 07/04. Indianapolis, IN.
- Presentation on "Selected presentation on "Conventional combine use for selective one-pass harvesting of corn stover" at the 26<sup>th</sup> Symposium on Biotechnology for Fuels and Chemicals. 05/04. Chattanooga, TN.
- Presentation on "Modeling airflow in grain bins" at the USDA Regional Project NC-213. 02/04. Minneapolis, MN.
- Invited presentation on “Selective harvest of corn stover for increased fermentable sugar content” at the Agricultural Equipment Technology Conference (Sponsored by ASAE). 2/04. Louisville, KY.

- Presentation on "Collection and characterization of corn stover in Kentucky" at the Bioenergy 2002 Conference. 09/02. Boise, ID.
- Presentation on "Post-harvest physical properties of corn stover" at the workshop for Oak Ridge National Laboratory Contractors. 11/01. Memphis, TN.

### Professional Development

- Kentucky Agricultural Summit and Bioenergy Symposium (Nov 17, 2011).
- KY Governor's Office of Agricultural Policy bus tour of biomass energy in Missouri (May 2-4, 2011)
- Montgomery County Farmer/Banker Field day, Townsend Farm 09/07
- Burton Field Day, Mays Lick, biomass field day (08/07)
- Attended ABET evaluator training at ASAE meeting (06/07)
- Canola and small grain field day at Miles Enterprises 06/07
- Distillers grains technology conference, Louisville, KY (05/07)
- Guest lecture at Purdue University on high temperature drying simulation. (05/07),
- Attended Sweet Sorghum for Ethanol Meeting (Pigeon Forge, TN, 02/07)
- Agricultural Equipment Technology Conference (02/07)
- Kentucky Energy Summit (Louisville, KY, 2006)
- Attended 1<sup>st</sup> workshop of the SE Region Sun Grant biomass energy feedstock partnership (5/06 Knoxville, TN).
- DOE/USDA meeting on sustainability of corn stover removal. 08/05. Lincoln, NE.
- Attended Southern Bio-Products Conference. 03/05. Jackson, MS.
- NC-213 Grain Quality Conference. 02/05. Kansas City, MO.
- Attended biodiesel Showcase. 02/05. Frankfort, KY.
- Attended meeting with NASULGC (National Association of State Universities and Land Grant Colleges) and DOE National Renewable Energy Laboratory (NREL). 07/04. Golden, CO.
- Attended open house of Commonwealth Agri-Energy ethanol plant. 06/04.
- Ag. Faculty Council workshop for promotion and tenure. 02/04.
- Ethanol Workshop. 02/03. Frankfort, KY.
- University of Kentucky Promotion and Tenure Workshop. 10/03.
- US-Brazil Higher Education Consortia Conference (FIPSE/CAPES). 10/03. Miami, FL.
- NC-213 Grain Quality Conference. 02/03. Indianapolis, IN.
- Symposium on Biotechnology for Fuels and Chemicals. 05/03. Breckenridge, CO.
- ASAE Agricultural Equipment Technology Conference. 02/03. Louisville, KY.
- Panel speaker for Agriculture Faculty Council on grant sources from non-USDA sources. 09/02.
- Collection of biomass feedstocks for bioenergy. Workshop at International ASAE Meeting. 07/02. Chicago, IL.
- NC-213 Grain Quality Conference. 02/02. Kansas City, MO.
- Soft Red Winter Wheat Workshop. 04/02. Wooster, OH.
- Meeting with researchers at Oak Ridge National Laboratory. 09/01. Oak Ridge, TN.
- Illinois Wheat Association meeting. 08/01. Highland, IL.
- Corn grading school. 08/01. Bowling Green, KY.
- College of Agriculture Grain Tour. 07/01. Various locations in KY.

- Kentucky-Tennessee ASAE Section meeting. 06/01. Cumberland Falls, KY.
- New Faculty Bus Tour. 06/01. Various locations in KY.
- Integrated Pest Management meeting. 03/01. Bowling Green, KY.
- NC-213 Grain Quality Conference. 02/01. Kansas City, MO.
- UK Wheat Science Group. 01/01. Princeton, KY.
- Purdue University Value-Added Grain Seminar. 11/00. Evansville, IN.
- Purdue University Value-Added Grain Seminar. 12/99. Evansville, IN.