

CURRICULUM VITAE

Period of Review 1999-present

Last Updated: June 6, 2005

NAME

Thomas G. Mueller, Assistant Professor of Agronomy (January 1999–present)

- Area: Soil and Water Conservation and Management
- DOE: Research 88%, Teaching 12%

EDUCATION

Ph.D. 1998 Michigan State University – Soil Management.

- Dissertation: Accuracy of soil property maps for site-specific management.

M.S. 1994 Purdue University – Soil Management/Fertility.

- Thesis: An agronomic evaluation of a site-specific management system for maize production in Northwestern Indiana.

B.S. 1990 Purdue University – Crop and Soil Science.

PROFESSIONAL EXPERIENCE

1999 to present Assistant Professor of Agronomy, University of Kentucky, Lexington, KY

1994 to 1998 Graduate Research Assistant, Michigan State University, East Lansing, MI.

1994 Resident Director of a Purdue University undergraduate student exchange in Godollo, Hungary.

1990 to 1993 Graduate and Teaching Assistant, Purdue University, West Lafayette, IN.

HONORS AND AWARDS

- Invited Speaker, ASA Meetings, 2004 (see Presentations section).
- NRCS certificate of appreciation for GIS/GPS workshop, 2003.
- Scientific Assessment Panel for the European Precision Agriculture Conference. Montpellier, France, 2001.

EXTRAMURAL FUNDING

Percentage of total funds directed to my research program listed in parenthesis.

Summary

- Funds allocated to my program prior between January of 1999 and May of 2005: **\$592,200.**
- Additional funds to be allocated to my program after May of 2005: **\$151,300.**

Nationally Competitive Projects

- a) Stombaugh, T.S. (PI) and **T.G. Mueller (Co-PI)**. 2002-2004. Sensors for delineation of management zones. USDA NRI, **\$129,632 (39%)**.

Nationally Competitive Projects (Pending)

- b) **T.G. Mueller (PI)**, T.J. Neiman, H. Cetin, A.D. Karathanasis, and B.D. Lee 2005-2008. Improving soil conservation practices using geospatial technologies. USDA-NRCS Conservation Initiative Grants, **\$441,546 (59%)**. Submitted March 28, 2005.

Competitive Projects within the Commonwealth of Kentucky

- c) Naugle, B. and H. Cetin (Murray State PI's), **T.G. Mueller (UK-PI)**, and C. McMichael (Morehead State University-PI). 2005-2007. Simulations of catastrophic events and associated emergency response planning for Mid-America. Department of Homeland Security. \$385,550. **UK subcontract amount directed to my program beginning in June, 2005: \$111,600.**
- d) Cetin, H., G.A. Carter, **T. G. Mueller (Co-PI)**, D. Ferguson, T.S. Stombaugh, S.A. Shearer, M. Collins, R. Barnhisel, C. Liu, and W. Spencer. 2001-2002. Early detection of nitrogen deficiency in agricultural crops and mapping of forest vegetation using hyperspectral remote sensing. NASA-EPSCoR, **\$25,000 (30%)**.
- e) **Mueller, T.G. (PI)**, N.J. Hartsock, S.A. Shearer, K.L. Wells, G.A. Thomas, and R.I. Barnhisel. 2000 -2001. Enhancing soil and crop management with an electrical conductivity sensor. Kentucky Corn Growers, **\$6,000 (100%)**.
- f) Cetin, H., W. Spencer, **T. G. Mueller (Co-PI)**, C. Liu, S. A. Shearer, G.A. Carter, and R. O. Green. 2000-2001. Establishment of a research cluster: commercialization of remote sensing in Kentucky. NASA-EPSCoR, **\$15,000.**

USDA Special Grant Projects

Research projects involved as a PI or Co-PI.

- g) **Mueller, T.G. (PI)**, T.J. Neiman, H. Cetin, and A.D. Karathanasis. 2005-2008. Precision Land Use, Conservation, and Management: Improving Soil Survey Data with Geospatial Technologies. **\$62,100 (64%)**.

- h) Stombaugh, T.S., and **T.G. Mueller (co-PI)**. 2003-2006. A low-cost remote sensing platform for agriculture, **\$76,300(27%)**.
- i) **Mueller, T.G. (PI)**, R.I. Barnhisel, H. Cetin, C. Dillon, L.W. Murdock, S.A. Shearer, and T.S. Stombaugh. 2002-2005. Variable rate N management, **\$139,400 (100%)**.
- j) **Mueller, T.G. (PI)**, T.S. Stombaugh, S.A. Shearer, R.I. Barnhisel, C. Lui, C.R. Dillon, L.W. Murdock, H. Cetin, M. Bitzer, M. Collins, G. Thomas, J. Grove, and K.L. Wells. 2001-2004. Sensors and variable rate management, **\$117,700 (100%)**.
- k) **Mueller, T.G. (PI)**, S.A. Shearer, A.D. Karathanasis, E. Perfect, K.L. Wells, L.W. Murdock, D.R. Nielsen, R. Barnhisel, H. Cetin, S.F. Higgins, and C.R. Dillon. 2000-2003. Explaining spatial variability in grain yield, **\$125,700 (100%)**.
- l) **Mueller, T.G. (PI)**, S.A. Shearer, A.D. Karathanasis, E. Perfect, M.S. Coyne, K.L. Wells, D. Barnhisel, J.A. Thompson, and C.R. Dillon, and M. Collins. 1999-2002. Soil sampling, soil surveys, and sensors for precision agriculture, **\$79,900 (100%)**.

Education projects involved as a PI or Co-PI.

- m) **Mueller, T.G. (PI)**, T.S. Stombaugh, S.A. Shearer, and H. Cetin. 2002-2005. Spatial applications for agriculture: Educational case studies-phase II, **\$40,400 (50%)**.
- n) Shearer, S.A., **T.G. Mueller (co-PI)**, C.R. Dillon, and S.G. McNeil. 2000-2003. Spatial applications for agriculture: Educational case studies, **\$74,600 (33%)**.

Research projects involved as a Co-investigator

- **Mueller, T.G.** co-investigator for 16 additional multidisciplinary projects.

PUBLICATIONS

Names in italicizes are graduate students under my direct supervision

Refereed Journal Articles – Published and in Press

1. **Mueller, T.G.**, S.R.K. Dhanikonda, N.B. Pusuluri, A.D. Karathanasis, K.K. Mathias, *B. Mijatovic*, and *B.G. Sears*. 2005. Optimizing inverse distance weighted interpolation with cross-validation. Soil Science (In Press).
2. *Hartsock, N.J.*, **T.G. Mueller**, A.D. Karathanasis, and P.L. Cornelius. 2005. Interpreting soil electrical conductivity and terrain attribute variability with soil surveys. The Journal of Precision Agriculture. 6:53-72.

3. Karathanasis, A.D., **T.G. Mueller**, B. Boone, Y.L. Thompson. 2005. Nutrient removal from septic effluents as affected by soil thickness and texture. *J. Water & Health* (In Press).
4. **Mueller, T.G.**, N.B. Pusuluri, K.K. Mathias, P.L. Cornelius, and R.I. Barnhisel. 2004. Site-specific fertility management: A model for map quality. *Soil Sci. Soc. Am. J.* 68: 2031-2041.
5. **Mueller, T.G.**, N.B. Pusuluri, P.L. Cornelius, K.K. Mathias, R.I. Barnhisel, and S.A. Shearer. 2004. Map quality for ordinary kriging and inverse distance weighted interpolation. *Soil Sci. Soc. Am. J.* 68: 2042-2047.
6. **Mueller, T.G.**, *B. Mijatovic*, *B.G. Sears*, N. Pusuluri, and T.S. Stombaugh. 2004. Soil electrical conductivity map quality. *Soil Science.* 68:2031-2041.
7. Pils, J.R.V., A.D. Karathanasis, and **T.G. Mueller**. 2004. Concentration and distribution of six trace metals in Northern Kentucky soils. *Soil and Sediment Contamination.* 13:37-51.
8. **Mueller, T.G.**, *N.J. Hartsock*, T.S. Stombaugh, S.A. Shearer, P.L. Cornelius, and R.I. Barnhisel. 2003. Soil electrical conductivity map variability in limestone soils overlain by loess. *Agron. J.* 95:496-507.
9. **Mueller, T.G.**, and F.J. Pierce. 2003. Enhancing spatial estimates of soil carbon with terrain attributes. *Soil Sci. Soc. Am. J.* 67: 258-267.
10. **Mueller, T.G.**, F.J. Pierce, O. Schabenberger, and D.D. Warncke. 2001. Map quality for site-specific management. *Soil Sci. Soc. Am. J.* 65: 1547-1558.

Invited Refereed Journal Articles and Book Chapters – Accepted

11. **Mueller, T.G.**, H. Cetin, R.A. Fleming, C.R. Dillon, A.D. Karathanasis, and S.A. Shearer. Erosion probability maps: 2005. Calibrating precision agriculture data with soil surveys using logistic regression. *Journal of Soil and Water Conservation.* Accepted April 14, 2005.
12. **Mueller, T.G.** Assessing map quality for site-specific fertility management. 2005. *In* F.J. Pierce and M. Yen (ed.) *Applications of GIS in Agriculture.* ESRI Press. Redlands, CA. Accepted May 2nd, 2005.

Refereed Journal Articles – In Review

13. *B.G. Sears*, *B. Mijatovic*, **Mueller, T.G.**, and R.I. Barnhisel. Interpreting yield variability with electrical conductivity and terrain attributes across a central Kentucky landscape. 2005. Submitted to *Crop Management.* Submitted May 9th.

Refereed Conference Proceedings

14. Dillon, C.R., **T.G. Mueller**, and S.A. Shearer. 2003. An economic optimization model for management zone configuration. p. 165 – 169. *In* S. Blackmore and A. Werner (ed.) *Proceedings for the 4th European Conference on Precision Agriculture.* Wageningen Academic Publishers. Wageningen, The Netherlands.
15. Stombaugh, T., A. Simpson, J. Jacobs, and **T.G. Mueller**. 2003. A low cost platform for obtaining remote sensed imagery. p. 665-670. *In* S. Blackmore and A. Werner (ed.)

Proceedings for the 4th European Conference on Precision Agriculture. Wageningen Academic Publishers. Wageningen, The Netherlands.

16. *Hartsock, N.J., T.G. Mueller, A.D. Karathanasis, P.L. Cornelius.* 2001. The potential for enhancing soil surveys with digital terrain models and electrical conductivity in Kentucky. p. 389-393. *In S. Blackmore and G. Grenier (ed.) Proceedings for the 3rd European Conference on Precision Agriculture.* Wageningen Academic Publishers. Wageningen, The Netherlands.

Other Conference Proceedings

17. Barnhisel, R.I., A. Moberly, and **T.G. Mueller**. 2005. Variable Seeding and Nitrogen Rates on Rolling Kentucky Terrains: Effects on Corn Yield. *In Robert et al. (ed.) Proc. 7th International Conference on Precision Agriculture.* ASA Misc. Publ., ASA, CSSA, and SSSA, Madison, WI. Published on CD.
18. Spaulding, A.D., S.E. Saghaian, C. Dillon, **T.G. Mueller**, and S.A. Shearer. 2005. The value of electrical conductivity and topographic information for variable rate nitrogen application. *In Robert et al. (ed.) Proc. 7th International Conference on Precision Agriculture.* ASA Misc. Publ., ASA, CSSA, and SSSA, Madison, WI. Published on CD.
19. Haluk Cetin, J.T. Pafford, and **T.G. Mueller**. 2005. Precision agriculture using hyperspectral remote sensing and GIS. Proceedings of 2nd International Conference on Recent Advances in Space Technologies-RAST2005, the Institute of Electrical and Electronics Engineers (IEEE) Publications, June 2005. (IN PRESS).
20. *Sears, B.G., T.G. Mueller, N. Pusuluri, and K. Iskapalli.* 2004. Soil electrical conductivity map quality: Impact of interpolation search neighborhood parameters. North Central Extension-Industry Soil Fertility Conference Proceedings. Des Moines, IA. November 11 and 12, 2004. (IN PRESS).
21. **Mueller, T.G.** A.D. Karathanasis, P.L. Cornelius, and H. Cetin. 2003. Hyperspectral imagery: variability within and between soil map phases. *In P.C. Robert et al. (ed.) Proc. 6th International Conference on Precision Agriculture.* ASA Misc. Publ., ASA, CSSA, and SSSA, Madison, WI. (Published on CD).
22. Dillon, C.R., **T.G. Mueller**, and S.A. Shearer. 2003. The value of innovative seed coatings to delay germination under field average and variable rate. *In P.C. Robert et al. (ed.) Proc. 6th International Conference on Precision Agriculture.* ASA Misc. Publ., ASA, CSSA, and SSSA, Madison, WI. (Published on CD).
23. Hancock, D. W., T. S. Stombaugh, S. A. Shearer, **T. G. Mueller**, and C. R. Dillon. 2003. Extension outreach in precision agriculture for Kentucky. ASAE Paper No. 031098. ASAE Annual International Meeting, Las Vegas, NV. July 27-30.
24. Shearer, S. A., T. S. Stombaugh, J. P. Fulton, and **T. G. Mueller**. 2002. Considerations for development of variable rate controller test standard. ASAE Paper No. 021191.AAEA Annual International Meeting, Chicago, IL. July 28 to July 31.
25. Thomasson, J.A., S.A. Shearer, R.L. Hoskinson, J.R. Wooten, R.K. Fink, J.P. Fulton, S.F. Higgins, **T.G. Mueller**. 2001. Decision Support System for Agriculture (DSS4Ag)

- applied to fertilization of corn and cotton. ASAE Paper No. 01-1018. ASAE Annual International Meeting, Sacramento, CA. July 29 – August 1.
26. *Hartsock, N.J., T. G. Mueller*, G.W. Thomas, R.I. Barnhisel, and K.L. Wells. S.A. Shearer. 2001. Soil electrical conductivity variability. *In* P.C. Robert et al. (ed.) Proc. 5th International Conference on Precision Agriculture. ASA Misc. Publ., ASA, CSSA, and SSSA, Madison, WI. (Published on CD).
 27. Shearer, S.A., R.A. Fleming, **T.G. Mueller**, T.S. Stombaugh, and J.L. Taraba. 2001. Optimization of animal nutrient application for reduced environmental loading using GIS. ASAE Paper No. 01-1014. ASAE Annual International Meeting, Sacramento, CA. July 29 - August 1.
 28. Dillon, C.R., S.A. Shearer and **T.G. Mueller**. 2001. A mixed integer, nonlinear programming model of innovative variable rate planting date with polymer seed coatings. AAEA paper num. 2657. AAEA Annual Meeting, Chicago, IL. August 4-8.
 29. **Mueller, T.G.**, K.L. Wells, G.W. Thomas, R.I. Barnhisel, *N.J. Hartsock*, A. Kumar, C.R. Dillon, S.A. Shearer. 2000. Soil fertility map quality: Case studies in Kentucky. *In* P.C. Robert et al. (ed.) Proc. 5th International Conference on Precision Agriculture. ASA Misc. Publ., ASA, CSSA, and SSSA, Madison, WI. Published on CD.
 30. Thomas, G.W., **T.G. Mueller**, R.I. Barnhisel, *N.J. Hartsock*. 2000. El papel de la agricultura de precision: Para mejorar la productividad agricola en siembra directa. 8th Congreso Nacional de AAPRESID. Vol I: 155-165.
 31. Shearer, S.A., **T.G. Mueller**, C.R. Dillon, J.P. Fulton, *N.J. Hartsock* and J. Stull. 2000. A GIS-Based simulation model for estimating the potential benefits of variable-rate fertilizer application. ASAE Paper No. 001105. ASAE Annual International Meeting, Milwaukee. July 9-12.
 32. Shearer, S.A., R.L. Hoskinson, R.K. Fink, **T.G. Mueller**, A. Thomasson, J.P. Fulton, and M. Ellis. 2000. Use of the decision support system for agriculture (DSS4Ag) for corn fertilization in Kentucky. *In* P.C. Robert et al. (ed.) Proc. 5th international conference on precision Agriculture. ASA Misc. Publ., ASA, CSSA, and SSSA, Madison, WI. (Published on CD).
 33. Shearer, S.A., T.F. Burks, J.A. Thomasson, **T.G. Mueller**, J.P. Fulton, S.F. Higgins, and S. Samson. 1999. Yield prediction using a neural network classifier trained using soil landscape features and soil fertility data. ASAE Paper No. 993042. ASAE Annual International Meeting, Toronto, Canada, July 18-21.

Research Reports

34. **Mueller, T.G.**, R.I. Barnhisel, and S.A. Shearer. 2000. Precision agriculture opportunities for Kentucky: Agronomic research at the University of Kentucky. Agronomy Research Reports.
35. **Mueller, T.G.**, S.A. Shearer, K.L. Wells, D.S. Adams, and A. Kumar. 2000. Assessing soil fertility map quality in Kentucky. Agronomy Research Reports.

36. *Hartsock, N.J., T.G. Mueller, S.A. Shearer, G.W. Thomas, K.L. Wells, and R.I. Barnhisel.* 2000. Soil electrical conductivity variability. Agronomy Research Reports.
37. Thomas, G.W., **T.G. Mueller**, M.S. Coyne. 2000. Topography and community substrate use. Agronomy Research Reports.

PRESENTATIONS

Names in italicizes are graduate students under my direct supervision

National and Regional Invited Presentations

- **Mueller, T.G.**, C.R. Dillon, and S.A. Shearer. 2004. Marginally Productive land identification using landscape features. For the symposium: Precision Conservation in North America. ASA/CSA/SSSA 68th Annual Meetings. Seattle, WA.
- **Mueller, T.G.** 2002. Soil electrical conductivity, terrain attributes, and hyperspectral imagery: Variability between and within soil map phases. American Society for Photogrammetry & Remote Sensing Mid-South Regional 2002 meeting on imaging and Geospatial Information in the 21st Century, October 24-25, Murray State University, Murray, KY.
- **Mueller, T.G.** 1999. Issues of scale and secondary map information: A precision agriculture example from Michigan. For the mini-symposium: Issues of scale and spatial variability as related to solute transport. Presented to multi-state project meeting S-257 (Soil Physics Regional Project). Lexington, KY Monday April 26 1999.

Other Invited Presentations

- **Mueller, T.G.** 2003. Map quality for site-specific management. Geography Department, University of Kentucky. September 12.
- **Mueller, T.G.** 2001. Precision agriculture. Horticulture Department, University of Kentucky. November 12.

Presentations at Professional Meetings

- **Mueller, T.G.**, N. Pusuluri, B. Mijovic, and B.G. Sears. 2004. Soil electrical conductivity map quality. Agronomy Abstracts. File: 5522.pdf.
- *Poulette, M.M., T.G. Mueller, S.A. Shearer, T.S. Stombaugh, J.P. Fulton, R. Prewitt, and H. Cetin.* 2004. Predicting spatial response to nitrogen with precision agriculture technologies. Agronomy Abstracts. File: 5926.pdf
- Cetin, H., and **T.G. Mueller**. 2004. Hyperspectral data analysis for detection of nitrogen deficiency in corn. The 20th Annual Louisiana Remote Sensing and GIS Workshop, Lafayette, LA. April 20-22.
- **Mueller, T.G.**, and T.S. Stombaugh. 2003. Using EC for management decisions. Conservation Tillage and Technology Conference, Ada, OH. March 4.

- Cetin, H., **T.G. Mueller**, and G. A. Carter 2002. Comparison of IKONOS and RDACS imagery for detection of nitrogen deficiency in corn. The 2002 High Spatial Resolution Commercial Imagery Workshop. USGS Headquarters, Reston, VA. March 25 – 27.
- **Mueller, T.G.**, F.J. Pierce, S.A. Shearer, R.I. Barnhisel. 2001. Map quality for site-specific fertility management: An analysis of methods. *Agronomy Abstracts*. File: s04 mueller100932-P.PDF.
- **Mueller, T.G.**, R.I. Barnhisel., S.A. Shearer. 2001. Geostatistical decisions and impact on map quality. *Agronomy Abstracts*. File: s04-mueller100454-O.PDF.
- *Richard, A.C.*, **T.G. Mueller**, E.M. D'Angelo, M.S. Coyne, M. Collins. 2001. Spatial variability of nitrogen processes and properties across a Kentucky landscape. *Agronomy Abstracts*. File: s06-mueller110533-P.PDF.
- Dillon, C.R., **T.G. Mueller** and S.A. Shearer. 2001. An assessment of the profitability and risk management potential of variable rate seeding and planting date. Paper presented at the Southern Agricultural Economics Association meeting. Fort Worth, Texas. January 28-31. *Abstracts in Journal of Agricultural and Applied Economics*. 33:3-622.
- **Mueller, T.G.**, S.A. Shearer, R.I. Barnhisel, G.W. Thomas, K.L. Wells, and A. Kumar. 2000. Map quality for site-specific fertility management in Kentucky. *Agronomy Abstracts*, p. 269.
- **Mueller, T.G.** and F.J. Pierce. 2000. Optimizing spatial estimates of soil carbon with terrain attributes. *Agronomy Abstracts*, p. 309.
- **Mueller, T.G.**, F.J. Pierce, and S.A. Shearer. 2000. Assessing spatial uncertainty for site-specific fertility management. North American Council on Geostatistics annual meeting. University of Michigan. Ann Arbor, MI. August 11.
- *Hartsock, N.J.*, **T.G. Mueller**, S.A. Shearer, G.W. Thomas, R.L. Barnhisel, K.L. Wells. 2000. Soil electrical conductivity variability: A research approach. *Agronomy Abstracts*, p. 331.
- Shearer, S.A., **T.G. Mueller**, J.P. Fulton, C.A. Dillon, *N.J. Hartsock*. Assessing variable rate fertilizer application: An interdisciplinary approach. 2000. *Agronomy Abstracts*, p. 294.
- Thomas, G.W., M.V. Fernandez-Canigia, **T.G. Mueller**, M.S. Coyne. 2000. Microbial diversity as affected by landscape position in two Kentucky physiographic regions. *Agronomy Abstracts*, p. 254.
- **Mueller, T.G.**, F.J. Pierce, O. Schabenberger, D.D. Warncke. **1999**. Assessing map accuracy for site-specific fertility management. *Agronomy Abstracts*, p. 284.

TEACHING AND ADVISING

Please refer to teaching portfolio for complete description of teaching activities.

Graduate Students - Completed

- A.C. Osborne, MS in Plant and Soil Science, 2003.
 - Thesis: Soil microbial community structure indices for site-specific management.
- N.J. Hartsock, MS in Plant and Soil Science, 2001.
 - Thesis: In situ soil electrical conductivity variability in several Kentucky agricultural fields.

Graduate Students - Current

- B.G. Sears, MS in Plant and Soil Science (in completion).
 - Thesis: Corn grain yield variability across a central Kentucky Landscape. Passed final exam on April 18th, 2005 and is expected to complete in June.
- M.M. Foley, MS in Plant and Soil Science (in progress).
 - Thesis: Spatial variability of crop response to nitrogen. Expected graduation date: August, 2005.
- B. Mijatovic, MS in Plant and Soil Science (in progress).
 - Thesis: Soil sensor variability as a function of soil chemical, physical, and morphological characteristics.

Graduate Student - Committees

- M. Kanakasabai, Ph.D. in Agricultural Economics, 2003.
- J. Hallany, Ph.D. student in Bio-systems and Agricultural Engineering (in progress)
- D.L. Stangeland, MS in Bio-systems and Agricultural Engineering, 2004.
- E.S. Flynn, MS student in Crop Science (in progress).
- D.W. Hancock, Ph.D. student in Crop Science (in progress).
- J.T. Johnson, MS student in Crop Science (in progress).
- A.M. Moberly, MS student in Plant and Soil Science (in progress).

Visiting Scholars

- Meng Fengxuan, Institute of Soil and Fertilizer, Xinjiang Academy of Agricultural Sciences, China (November 2001 to November 2002).

Undergraduate Mentoring

- Mentor for undergraduate student projects (Matthew Gajdzik, John Hatton, Adam Probst, John Storm, and Pete Welsh).
- Mentor for summer exchange students from Etablissement National d'Enseignement Superieur Agronomique de Dijon (ENESAD), Dijon, France (Jerome Julien and Marcilly Baptiste).

Soil Use and Management (PLS 468G)

This course is my major teaching responsibility. Topics include soil erosion and conservation, soil limitations to land use and management, agricultural land use and management in Kentucky, tillage systems, and no-till systems. Students also learn to use erosion modeling software, use spatial data from publicly available sources, collect data with GPS, and analyze data with GIS to make better and more efficient land use and management decisions. I am responsible for the entire course. See teaching portfolio for full description of this course and complete teaching evaluations.

Teaching Evaluations for PLS 468G.

Year	1999	2001	2002	2003	2004
NUMBER OF STUDENTS	15	10	12	11	9
COURSE ITEMS					
Average Scores: (questions 1 - 8)	2.5	2.7	3.1	3.3	3.1
INSTRUCTOR ITEMS					
Average Scores: (questions 9 - 14)	2.7	2.9	3.2	3.4	3.6
LEARNING OUTCOMES					
Average Scores: (questions 15 - 19)	2.8	2.9	3.1	3.2	3.7
SUMMARY ITEMS					
20. Overall value of the course	2.5	2.9	3.4	3.3	3.3
21. Overall quality of teaching	2.2	2.8	2.6	3.3	3.1

Topics in Agricultural Engineering: Precision Agriculture (BAE 599)

I am responsible for 27% of this course which was designed to teach undergraduate and graduate students to 1) acquire and analyze geographically referenced data for the management of crop production systems and 2) analytically assess the utility of these systems. I teach four 1-week modules involving 1) mapping spatial data, 2) site specific fertility management, 3) electrical conductivity, and 4) remote sensing. See teaching portfolio for full description of this course and complete teaching evaluations.

Teaching Evaluations for BAE 599.

	2001	2002	2003	2004
NUMBER OF STUDENTS	13	13	9	9
COURSE ITEMS				
Average Scores: (questions 1 - 8)	not	3.2	3.2	3.0
INSTRUCTOR ITEMS	rated			
Average Scores: (questions 9 - 14)		3.2	3.0	3.1
LEARNING OUTCOMES				
Average Scores: (questions 15 - 19)		3.3	3.0	3.2
SUMMARY ITEMS				
20. Overall value of the course		3.4	3.3	3.4
21. Overall quality of teaching		2.6	2.9	2.9

Other Instruction

- Guest instructor for **20 lecture or laboratory class periods** in two subject areas:
 - **Soil Management** [Kentucky Certified Crop Advisor Training (PLS 490)] and
 - **Precision Agriculture** [Soil Morphology and Classification (PLS 573), Fundamentals of Soil Science Laboratory (PLS 367) and Grain Crops (PLS 412)].

Educational Initiatives

- Developed **17** on-line educational exercises or modules. These can be found at <http://www.uky.edu/~mueller/pages/Teaching.htm>.
- **One** on-line education module was developed into an **invited refereed book chapter** (Reference is given in Publications section) and is being used for a graduate level GIS course at Texas State University, San Marcos, TX.
- **Four** funded education proposals (References are in Extramural Funding section).

Activities to Improve Teaching and Learning

- Attended “Quick Starter Program: Teaching Enhancement Seminar Series for New Faculty” taught by the Teaching and Learning Center in 2001.
- 2 Mid-Semester Course Evaluations for PLS 468G (2001 and 2003).
- Faculty peer review of PLS 468G by Dr. Mike Mullen and Dr. Todd Pfeiffer in 2003.

SERVICE

Extension Publications

- Shearer, S.A., J.P. Fulton, S.G. McNeill, S.F. Higgins, and **T.G. Mueller**. 2000. Elements of precision agriculture: Basics of yield monitor installation and operation. UK Cooperative Extension Service. PA-1.
- Stombaugh, T.S., **T.G. Mueller**, S.A. Shearer, C.R. Dillon, and G.T. Henson. 2001. Guidelines for adopting precision agriculture practices. UK Cooperative Extension Service. PA-2.

Extension Publications – In Review

- D.W. Hancock, **Mueller, T.G.**, and T.S. Stombaugh. Remote sensing. Submitted to UK Cooperative Extension Service (precision agriculture publication series).
- D.W. Hancock, **Mueller, T.G.**, and T.S. Stombaugh. Advances in remote sensing. Submitted to UK Cooperative Extension Service (precision agriculture publication series).

Outreach

- Precision agriculture in-service training presentations. Princeton, KY, 2000.
- Precision agriculture presentations during CCA training. Princeton, KY, 2000 and 2001.
- Precision agriculture presentation for Kentucky Precision Agriculture Network (KPAN) field day. Owensboro, KY, 2001.
- Soil and water conservation and management field presentation for 4-H Environthon for high school students. Lexington, KY, 2001.
- Precision agriculture workshop for UK SMASH, 2000 and 2001.
- Precision agriculture presentations at the College of Agriculture field days, Princeton KY, 2000 and 2002.
- Precision agriculture presentation to Southern States, 2002.
- Precision agriculture presentations during the Agronomy field day. Lexington, KY, 2001 and 2003.
- Co-author of precision agriculture presentation at the Precision Agriculture School at the National Farm Machinery Show, Louisville, KY, 2005.

- Organizing committee and lecturer for continuing education course entitled “Spatial Applications for Natural Resource Analysis: Basics of GPS and GIS”. Lexington, KY, 2003.
- Maintained and updated the Agronomy departmental poster for four Agriculture Roundup weeks, an Agronomy field day, and two College of Agriculture field days, 2000 to 2004.

Reviewer Service

- **18 Refereed Journal Paper Reviews:** Soil Science Society of America Journal (3), Agronomy Journal (7), Geoderma (1), Soil and Tillage Research (1), Soil Science (1), Soil and Water Conservation and Management (2), Applied Engineering in Agriculture (2), and Landscape Ecology (1).
- **1 Book Chapter:** Scaling Methods in Soil Physics. Pachepsky, Ya., Radcliffe, D. L., and Selim, H. M. (ed.). CRC Press, Boca Raton, 2003.
- **3 UK extension publications**
- **2 Grant Proposals:** USGS/NIWR proposal (1) and Ohio Agricultural Research and Development Center's Research Enhancement Competitive Grants Program (1).
- **4 Refereed Conference Proceedings Reviews** for the European Precision Agriculture Conference. Montpellier, France, 2001.
- **5 Abstracts** for the European Precision Agriculture Conference. Berlin, Germany, 2003.

Regional Committees

- Natural Resources Committee, Bluegrass Chapter of the Soil and Water Conservation Society, 2002-2004.
 - Vice Chairman 2003-2004.
- Program Committee, Bluegrass Chapter of the Soil and Water Conservation Society, 2003-2004.

University Committees

- UK GIS Day Organizing Committee, 2000 and 2001.

College Committees

- Precision Agriculture Steering Committee, 1999-2005.
- College of Agriculture Information Technology Committee, 2002 to 2004.

Departmental Committees

- AGR-1 Soils Group Committee, 1999-2005.
- Search Committee for Research Soils Specialist, 2001 to 2003.

- S.H. Phillips Distinguished Lecture Committee, 2002 to 2005.
- Corn Committee, 2003 to 2005.
- Departmental Display Committee, 2004-2005.

PROFESSIONAL DEVELOPMENT

Meetings

- American Society of Agronomy Annual Meetings. 1999, 2000, 2001, 2003, and 2004.
- Precision Agriculture and the Environment: Research Priorities for the Nation. A workshop in Nebraska City, NB, 1999.
- S283 - Precision Agriculture regional project, Tennessee, 2000.
- Fifth International Conference on Precision Agriculture. Minneapolis, MN, 2000.
- NCR 180 - Precision Agriculture regional project. Madison, WI, 2001.
- European Precision Agriculture Conference. Montpellier, France, 2001.
- Sixth International Conference on Precision Agriculture. Minneapolis, MN, 2002.

Membership in Professional Organizations

- American Society of Agronomy.
- Soil Science Society of America.
- Soil and Water Conservation Society.
- Gamma Sigma Delta.

Other Development

- Faculty tour of the Commonwealth. 1999.
- University New Faculty Orientation, 1999.
- “Introduction to Arc/GIS 8.x and extensions” presented by ESRI in Louisville, KY, 2001.
- College of Agriculture promotion and tenure workshops, 2003 and 2004.
- “Applying Data Mining Techniques” presented by SAS institute in Lexington, KY, 2004.