

GENERAL INFORMATION

Professional Experience

2003-present	Associate Professor, Food Science, Purdue University
2003-present	Courtesy Appointment, Agricultural & Biological Engineering, Purdue University
1997-2003	Associate Professor, Agricultural & Biological Engineering, Purdue University
1997-2003	Courtesy Appointment, Food Science, Purdue University
1992-1996	Assistant Professor, Agricultural & Biological Engineering, Purdue University
1989-1991	Graduate Research Associate, Agricultural Engineering, The Ohio State University
1987-1989	Graduate Teaching Associate, Agricultural Engineering, The Ohio State University

Registration and Licenses

Professional Engineer Registration (# 19600124), Indiana, 1996

Awards and Honors

Stan Joehlin Outstanding Graduate Student Teaching Award, Agricultural Engineering Department, The Ohio State University, awarded in 1989 and 1990.

Outstanding Research Award for School of Agriculture, Council of Graduate Students, The Ohio State University, 1989.

Outstanding Teacher (Agriculture), ABE Department, 1996. (A.8.a)

Blue Ribbon, ASAE Educational Aids Competition, for the publication "Implementing Site-specific management: Map- Versus Sensor-Based Variable-Rate Application," 2001. (C.2)

Award of Excellence. ASA Extension Education Division. For the textbook "The Precision Farming Guide for Agriculturists," 2001. (A.4.a)

ASAE Superior Paper Award, for the publication "Application of a Strain Gauge Array to Estimate Soil Mechanical Impedance On-The-Go," 2002. Co-author. (B.1.b.14)

Certificate of Appreciation. American Society of Agricultural Engineers. In recognition of outstanding service for co-authoring "Fundamentals of Electricity for Agriculture 3rd Ed." 2004.

Outstanding Teacher, FS Department, 2006.

Membership in Academic, Professional and Scholarly Societies

Tau Beta Pi (Engineering Honor Society), Member 1985-present.

Alpha Epsilon, National Agricultural Engineering Honor Society, Member 1986-present.

ASABE, The Society for Engineering in Agricultural, Food and Biological Systems, Member 1987-present. Advisor, Purdue student chapter, 1993-2003.

Gamma Sigma Delta National Agricultural Honor Society, Member 1988-present.

Food Process Engineering Institute, ASAE, Member 1991-present.

American Society of Engineering Education (ASEE), Member 1994-2003. Advisory board member, Purdue Chapter, 1996 – 2000.

Institute of Food Technologists, Member 1996-present.

National Pork Producers Council, Meat Quality Carcass Assessment Committee, Member 1996.

Annals of Tropical Research, International Advisory Board Member, 2000-present.

ISA – The Instrumentation, Systems, and Automation Society, Member 2003-present. Founding member of Lafayette Chapter 2004.

Phi Tau Sigma – The Honor Society for Food Scientists, Member 2006.

1. Courses Taught

Dr. Morgan is responsible for three undergraduate courses in the Food Science Department and co-teaches one interdisciplinary Maymester study-abroad course.

a. Courses Currently Taught

1. **FS 341, Food Processing I:** Sem. 2, Class 2, Lab. 3, Cr. 3. Applications of the fundamentals of food engineering, microbiology, and chemistry to methods of food processing and preservation; emphasis will be on processing concepts, preparation for food processing, food formulation, and thermal processing. Enrollment: S04 (31), S05 (29), S06 (38)
2. **FS 442, Food Processing II:** Sem. 1, Class 2, Lab. 2, Cr. 3. Study of food processing and preservation methods based on the integrated knowledge of microbiology, chemistry, and food engineering; emphasis will be on temperature reduction, water activity, concentration, dehydration, irradiation, and extrusion. Enrollment: F03 (29), F04 (32), F05 (28)
3. **FS 446, Food Process Automation:** Sem. 2, Class 1, Lab. 2, Cr. 2. Concepts, characteristics and uses of instrumentation and controls in the food industries. Controller selection and management for food processing. Introduction to concepts of Computer Integrated Food Manufacturing. Enrollment: S94 (5), S96 (5), S04 (6), S05 (13)
4. **FS 400k/ASM 491k, Tropical Ag & Food Processing in Brazil/Argentina:** Sem. Maymester, Class 3, Cr. 3. A study abroad experience in Brazil (2003, 2004, 2006) and Argentina (2006) to compare U.S. and Brazilian/Argentinian agricultural issues and organizations, environmental issues, and cultural differences. M03 (20), M04 (9), M06 (6).

1. Publications Related to Teaching (* indicates primary contribution)

a. Books

1. Morgan*, M.T. and D.R. Ess*. 1997. *The Precision-Farming Guide for Agriculturists*. John Deere publishing. 117 p. ISBN #0-86691-245-2.
2. Ess, D.R*. and M.T. Morgan*. 2003. *The Precision-Farming Guide for Agriculturists*. John Deere publishing. 138 p. ISBN #0-86691-287-8. Dr. Morgan was responsible for significant revisions to 4 out of 8 chapters.
3. Gustafson*, R.J. and M.T. Morgan*, 2004. *Fundamentals of Electricity for Agriculture* 3rd Ed. ASAE St. Joseph, MI. 497 p. ISBN # 1-892769-39-5. Dr. Morgan was responsible for 7 chapters totaling 224 p, and provided revisions and review on all 18 chapters.

b. Book Chapters

1. Morgan*, M.T. and D.R. Ess*, 1996. Sensors for tomorrow's precision agriculture. In *New Trends in Farm Machinery Development and Agriculture*, SAE Special Pub., SP-1194, SAE, pp. 27-34.
2. Morgan*, M.T., S. D. Parsons, and D.R. Ess. 2000. Global positioning systems. In *Precision Farming Profitability*, ed. J. M. Lowenberg-DeBoer, Publ. SSM-3. W. Lafayette, IN, USA: Agric. Res. Programs, Purdue Univ. pp. 56-61.
3. Brouder*, S. and M. T. Morgan*. 2000. Soil sampling and analysis. In *Precision Farming Profitability*, ed. J. M. Lowenberg-DeBoer, Publ. SSM-3. W. Lafayette, IN, USA: Agric. Res.

Programs, Purdue Univ. pp. 75-81.

4. Morgan*, M.T. and J.C. Forrest. 2000. Analysis of fresh pork color, firmness, wetness and marbling. In. *Procedures to Evaluate Market Hogs*. 4th Ed. NPPC. Des Moines, IA. pp. 21-29.
5. Morgan*, M.T. and T.A. Haley. 2006. Design of Food Process Controls. In. *Food Machinery Handbook*. William Andrew Publishing, Norwich, NY. ~50 pgs.

c. Refereed articles

1. Diefes*, H.A., M.R. Okos, and M.T. Morgan. 2000. Computer-aided process design using food operations oriented design system block library. *J. Food Eng.* 46(2):99-108.
2. Ismail, B., M.T. Morgan, and K. Hayes*. 2006. Effect of short study abroad course on students' openness to diversity. *J. Food Sci. Ed.* 5(1):15:18
3. Morgan*, M.T., B. Ismail, and K. Hayes. 2006. Relative Importance of the Institute of Food Technologists (IFT) Core Competencies – A Case Study Survey. *J. Food Sci. Ed.* 5(2):35-39.

d. Software Copyrights

FOODS-LIB: Food operations oriented design system block library software & user's manual. Copyright C-99022. M.R. Okos and H.A. Diefes, May, 1999. 183 p.

e. Papers prepared for Regional, National and International Society Meetings

4. Strickland*, R. M. and M. T. Morgan. 1993. Agricultural Systems Management: preparing students to meet the challenge of the future. ASAE paper No. 93-5512, St. Joseph, MI. 15 p.
5. Bellmer*, D.D, H.A. Diefes*, M.T. Morgan* and M.R. Okos. 1996. Development of a process design software package to supplement a food engineering curriculum. Paper No. 96-6031. The ASAE, St. Joseph, MI. 15 p.
6. Diefes*, H.A.; Okos, M.R., and M.T. Morgan. 1996. The Use of a Computer-Aided Steady State Food Process Design Package for Solution of Closed-Ended Problems. ASEE IL/IN Section Meeting, Peoria, Illinois. 5 p.
7. Ess*, D.R. and M.T. Morgan*. 1997. Development of a course in precision agriculture. ASAE Paper No. 97-5036. St. Joseph, MI. 14 p.
8. Ess*, D.R. and M.T. Morgan. 1999. Precision Farming—Demonstrating science and technology applications in agriculture. ASAE Paper No. 99-7002. St. Joseph, MI. 18 p.
9. Miles*, G.E., D.R. Ess, R.M. Strickland, M.T. Morgan. 2002. Agricultural Systems Management Technologies for Precision Agriculture. ASAE Paper No. 02-1014. St. Joseph, MI.
10. Morgan*, M.T., K. Hayes, and K. Wilson. 2007. Student Evaluations of Virtual Laboratory exercises as affected by learning styles. Hawaii International Conference on Education, Honolulu, HI.

2. Participation Regional & National Programs Related to Teaching

a. Attended/Participated in:

1. Fifth Annual Computer Integrated Manufacturing in Higher Education Alliance Conference, June 7-9, 1993. Grand Rapids, MI.
2. NSF-sponsored faculty enhancement workshop. June 21-25, 1993. Carnegie Mellon, Pittsburgh, PA "A unified classical/modern approach for undergraduate control education." (Dr. Morgan was selected by NSF as one of only 20 participants nationally to attend.)
3. McNelly Distinguished Lecture Series, Improving Undergraduate Instruction (attended 6 lectures). March-April, 1994. Purdue, University.
4. NASULGC North Central Regional Teaching Workshop. June 1995, Michigan State University.

5. USDA Challenge Grants Conference: Biological Engineering Course Development and Development of Senior-Level Biological Engineering Courses. July 12-13, 1996. Tempe, Arizona.
6. Bioethics Workshop. 1997. Purdue University.
7. NSF Undergraduate Teaching Workshop. 1997. Bucknell University.

b. Invited Presentations and Guest Lectures:

1. "Computer-aided design - Drawing without a pencil." State 4-H Mechanical Science Workshop. June 10-12, 1992. Lafayette, IN. (Attendance: 42 high school students).
2. "Machine Vision, NMR, and NIR sensors for Food Process Automation." The 17th Annual Food Science Student Symposium. 1994. Lafayette, IN. (Attendance: 50).
3. "Electrical distribution systems, lighting systems and electric motors." Presented 2 lectures each year. 1994, 1995. AGEN (ABE) 556–Food Plant Design. (Attendance: 15 students).
4. "Agricultural and Biological Engineering," Presented one lecture each year 1994-2000. EE 522-Biomedical Engineering Seminar. (Attendance: 35 students/yr).
5. Purdue Annual Herbicide Action Course. Lab Presenter - Sensors for Precision Agriculture. 1996-2000. Lafayette, IN. (Attendance: 45/yr).
6. "Precision Farming–Managing Technology and Information," National Association of Vocational Teachers National Converntion, December 12, 1997. Las Vegas, NV (with Dr. Ess). (Attendance: 50).
7. "Automation in Food Processing." 1998, 1999, 2000. ABE 120–Agricultural and Biological Engineering. (Attendance: 30 students/year).
8. "Applications of GPS in Precision Agriculture." Lecture and hands-on GPS lab for Introduciton to Precision Agriculture - ACSM 580. April 7, 1999. The Ohio State University, Columbus, OH. (Attendance: 27 students).
9. "Clarifying Principles of Color Measurement." Pork Quality Measurement Workshop. 52nd Reciprocal Meat Conference, June 21, 1999. Kansas City, MO. (Attendance: 35).
10. "Introduction to Precision Farming." Indiana High School Agriculture Teachers Workshops, June 10, 1999, West Lafayette, IN. (Attendance: 20).
11. "Process Instruments and Controls." Lectures and laboratory exercises for Quaker Oats employees as part of the Gatorade Food Processing Workshop. October 8-12, 2002. Purdue University (Attendance: limited to 40).
12. "High Pressure Processing of Foods" 2005. ABE 555 – Guest Lecture. (Attendance: 20 students)

3. Recognition Received from Students and Other Evidence of Impact on Students

a. Awards

Outstanding Teacher (Agriculture), ABE Department, 1996.

b. Numerical Evaluation Summaries for Courses Taught at Purdue from 2003-present

Questions	FS 341 Spring*	FS 442 Fall*	FS 446 Spring*
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*Scores out of 5: (5 = excellent, 1 = very poor)	04	05	06	03	04	05	06	03	04	05
My instructor created an environment for mutual respect	4.3	4.2	4.2	4.1	4.2	4.6	4.3	4.7	4.9	4.6
My instructor encouraged me to do my best work	4.0	4.0	4.2	4.0	4.1	4.0	4.1	3.9	4.7	4.2
My instructor stimulated interest in the course	3.8	4.0	4.0	4.1	3.8	3.8	4.0	4.0	4.3	4.0
I learned a lot from this instructor	4.7	4.9	4.6	4.0	4.0	4.2	4.2	3.9	4.7	4.0
Overall, I would rate this course as:	3.6	3.9	4.1	3.8	3.9	4.2	4.0	4.0	4.3	3.7
Overall, I would rate this instructor as:	3.9	3.9	4.1	4.0	3.9	4.1	4.2	4.1	4.7	4.2

10. Counseling

Dr. Morgan serves at the departmental counselor for all FMO majors in the FS department. In addition, he has served as an advisor to the FS student club since 2003.

Dr. Morgan serves as the departmental coordinator for the 11 academic advisors in the Agricultural and Biological Engineering Department. He has made a significant contribution to the counseling of students in the department. From 1993 to 1995 and from 1998 to 1999, he advised all freshman and sophomores in the ASM option, (30 students/yr). During the Spring and Summer 1993, he was acting coordinator for the ASM option. During this time, he met with all incoming freshman and their parents during “Day on Campus” and other programs. He served as the academic advisor to 3 Ukrainian and 1 Hungarian undergraduate students in the department. In the past 6 years, he has also been a student counselor in the ABE option. Currently, he counsels over 20 students in the Food Processing option in ABE.

For the past 9 years, Dr. Morgan has served as faculty advisor for the ASAE Student Branch where he has promoted activities that develop leadership skills in the students. He encourages students to become actively involved in community service projects. The student organizations in ABE have participated in the “adopt a highway” program and for the past 5 years and have donated time at Wolf Park in Battle Ground, IN.

B. CREATIVE ENDEAVOR, RESEARCH, SCHOLARSHIP

1. Published Work

In addition to three textbooks, four book chapters and a refereed teaching article, (A.4.a-b), Dr. Morgan has obtained a patent and 23 peer-reviewed research publications, with three more in review.

a. Patents

1. An automated system for soil pH mapping. 2002 Adamchuk, V.I., M.T. Morgan and D.R. Ess. Patent 6,356,830

b. Refereed Journal Publications (* indicates primary responsibility):

1. Wood*, R.K., M.T. Morgan*, R.G. Holmes, K.N. Brodbeck, T.G. Carpenter and R.C. Reeder. 1991. Soil physical properties as affected by traffic: singles, dual and flotation tires. *Trans. ASAE*, 34(6):2363-2369.
2. Morgan*, M.T., R.G. Holmes and R.K. Wood. 1993. A system for measuring soil physical properties in the field. *Soil Tillage Research*, 26:301-325.
3. Morgan*, M.T., R.K. Wood and R.G. Holmes. 1993. Dielectric moisture measurement of soil cores. *Trans. ASAE*, 36(1):17-22.

4. Wood*, R.K. R.C. Reeder* and M.T. Morgan*. 1993. Soil physical properties as affected by grain cart traffic. *Trans. ASAE*, 36(1):11-15.
5. Whitman*, T.A., J.C. Forrest*, M.T. Morgan*, and M.R. Okos. 1996. Electrical measurement for detecting early postmortem changes in porcine muscle. *Journal of Animal Sciences*, 74:80-90.
6. Bellmer*, D.D., M.T. Morgan*, J.C. Forrest and J.R. Wagner. 1996. Modeling of backfat for untrimmed pork loins. *Applied Engineering in Agriculture*, 12(5):579-584.
7. Kim*, Y.R. M.T. Morgan*, M.R. Okos and R.L. Stroshine. 1998. Modeling of dielectric properties of baked biscuit dough. *Journal of Microwave Power and Electromagnetic Energy*. 33(3): 184-194.
8. Atherton*, B.C., M.T. Morgan, S.A. Shearer, T.S. Stombaugh, and A.D. Ward*. 1999. Site-specific farming: a perspective on information needs, benefits and limitations. *Journal of Soil and Water Conservation*, 50(2):456-461
9. Adamchuk*, V.I., M.T. Morgan*, and D.R. Ess. 1999. An automated sampling system for measuring soil pH. *Trans. ASAE*, 42(4):885-891.
10. Forrest*, J.C., M.T. Morgan, J. R. Andersen, C. Borggaard, A.J. Rasmussen and B.L. Jespersen. 2000. Development of technology for the early post mortem prediction of water holding capacity and drip loss in fresh pork. *Journal of Meat Sciences*, 55(1):115-122.
11. Tan*, F.J., M.T. Morgan*, J.C. Forrest*, and D.E. Gerrard*. 2000. Assessment of fresh pork color with color machine vision. *J. Anim. Sci.*, 78:3078-3085.
12. Adamchuk, V.I., M.T. Morgan, and H. Sumali. 2000. Estimation of soil resistance using a strain gauge array. In: Proceedings of the Adaptive Structures and Materials Systems Symposium, AD-Vol. 60:261-267. J. Redmond and J. Main, eds. New York, New York: ASME.
13. Elliott*, P.W., K. Haghghi*, and M.T. Morgan. 2001. Noise source evaluation of a real-time soil sensor, Part I: Static elevation changes. *J. Agri. Eng. Res.*, 77(3):259-266.
14. Ahmad*, S.S., M.T. Morgan*, and M.R. Okos*. 2001. Effects of microwave on the drying, checking and mechanical strength of baked biscuits. *Journal of Food Engineering*, 50(2):63-75.
15. Adamchuk*, V.I., M.T. Morgan*, H. Sumali. 2001. Application of a strain gauge array to estimate soil mechanical impedance on-the-go. *Trans. ASAE*, 44(6):1377-1383. (Received 2002 ASAE Superior Paper award).
16. Ilyukhin*, S., T. Haley, M.T. Morgan. 2001. Electronic method for monitoring mercury in glass thermometers. *Applied Engineering in Agriculture*, 17(4):499-504.
17. Johannsen*, C.J., G.W. Petersen*, P.G. Carter, M.T. Morgan. 2003. Remote sensing changing natural resource management. *J. Soil and Water Conservation*. M/A:42A-45A.
18. Brouder*, S.M., M. Thom, V.I. Adamchuk and M.T. Morgan. 2003. Potential uses of ion-selective K electrodes in soil fertility management. *Comm. Soil Sci. Plan Anal*. 34(19&20):2699-2726
19. Adamchuk*, V.I., E. Lund, E. Dobermann, and M. Morgan. 2003. On-the-go mapping of soil properties using ion-selective electrodes. Presented at the Fourth European Conference on Precision Agriculture June 15-19, 2003. J. Stafford and A. Werner, eds. Wageningen, The Netherlands: Wageningen Academic Publishers.
20. Geng*, T., M. T. Morgan, A. K. Bhunia. 2004. Detection of low levels of *Listeria monocytogenes* cells by using a fiber-optic immunosensor. *Applied & Environmental Biology*, 70(10):6138-6146.

21. Adamchuk*, V.I., M.T. Morgan*, and J. M. Lowenberg-DeBoer. 2004. Agro-economic evaluation of soil pH mapping. *Precision Ag.* 5, 111-129.
22. Adamchuk* V.I., J.W. Hummel, M.T. Morgan, S.K. Upadhyaya. 2004. On-the-go soil sensors for precision agriculture. *Computers and Electronics in Agriculture* 44:71-91.
23. Bhunia, A.K., T. Geng, A. Lathrop, A. Valadez and M.T. Morgan. 2004. Optical immunosensors for detection of *Listeria monocytogenes* and *Salmonella Enteritidis* from food. *Proceedings of SPIE* Vol. 5271:1-6.
24. Adamchuk*, V.I., E. Lund, B. Sethuramasamyraja, M.T. Morgan, A. Dobermann. 2005. Direct measurement of soil chemical properties on-the-go using ion selective electrodes. *Computers and Electronics in Agriculture* 48:272-294.
25. Kim, K.P., B. Jagadeesan, Z.W. Jaradat, J.L. Wampler, A.A. Lathrop, M.T. Morgan, and A.K. Bhunia. 2006. Adhesion characteristics of Listeria adhesion protein (LAP) – expressing Escherichia coli to Caco-2 cells and the recombinant LAP to eukaryotic receptor Hsp60 by a surface plasmon resonant mirror sensor.. *FEMS Microbiology Letters*. 256(2):324-332.
26. Kim, G., M. T. Morgan, D.R. Ess, B.K. Hahm, A. Kothapalli, A. Valadez, A.K. Bhunia. 2006. Detection of *Listeria monocytogenes* using an automated fiber-optic biosensor: RAPTOR. *Key Engineering Materials: Special issue of 1st International Conference on Advanced Nondestructive Evaluation*. Jeju, Korea. Nov. 7 – 9, 2005. (accepted).
27. Morgan, M.T., G. Kim, D.R. Ess, A. Kothapalli, B.K. Hahm, A.K. Bhunia. 2006. Binding inhibition assay using fiber-optic based biosensor for the detection of foodborne pathogens. *Key Engineering Materials: Special issue of 1st International Conference on Advanced Nondestructive Evaluation*. Jeju, Korea. Nov. 7 – 9, 2005. (accepted).
28. Adamchuk*, V.I., M.T. Morgan, and S.M. Brouder. 2006. Development of an on-the-go soil pH mapping method: analysis of measurement variability. *Applied Engineering in Agriculture*. 22(3):10 pgs.

c. Papers Submitted to Refereed Publications (*in review*) (* indicates primary responsibility)

1. Kim, G., V. Nanduri, M.T. Morgan, D. Ess, B-K Hahm, A. Kothapalli, A. Valadez, T. Geng, and A.K. Bhunia. Detection of *Listeria monocytogenes* using an automated fiber-optic biosensor: RAPTOR™. *Sensors and Actuators B: Chemical*. (in review)

d. Other Papers/Conference Proceedings Presented at Regional, National and International Meetings (* indicates primary responsibility)

1. Morgan*, M.T., R.G. Holmes, M.J. Lichtensteiger. 1988. Air permeability measurement system for soil cores. ASAE Paper No. 88-1632. St. Joseph, Mich:ASAE. 15 p.
2. Keener*, K.M., R.K. Wood, R.G. Holmes and M.T. Morgan. 1991. Soil strength evaluation of sample cores in a field measurement system. ASAE Paper No. 91-1526. St. Joseph, Mich:ASAE. 10 p.
3. Morgan*, M.T., R.K. Wood and R.G. Holmes. 1992. Relationships between physical properties and applied stress for two Ohio soils. ASAE Paper No. 92-1522. St. Joseph, Mich:ASAE. 24 p.
4. Liu*, W., L.D. Gaultney* and M.T. Morgan*. 1993. Soil texture detection using acoustical methods. ASAE Paper No. 93-1015. St. Joseph, Mich:ASAE. 14 p.

5. McCauley*, J.D., B.A. Engel*, C.E. Scudder, M.T. Morgan and P.W. Elliott. 1993. Assessing the spatial variability of organic matter. ASAE Paper No. 93-1555. St. Joseph, Mich:ASAE. 14 p.
6. Morgan, M.T. 1993. Automated field measurement of soil texture and physical properties. SAE International Off-Highway & Powerplant Congress & Exposition, Milwaukee, WI. 5 p.
7. Bellmer*, D.D., M.T. Morgan*, J.A. Nyenhuis, J.S. Marks, and R.L. Stroshine. 1994. Detection of foreign objects in ground meat using MRI. Abstract, in Proceedings of the 47th Annual Reciprocal Meat Conference, State College, PA. 4 p. poster.
8. Morgan, M.T. Automated field measurement of soil nitrate. 1995. InfoAg Conference. Indianapolis, IN. 4 p. poster.
9. Loreto*, A.B. and M.T. Morgan*. 1996. Development of an automated system for field measurement of soil nitrate. ASAE Paper No. 96-1087. St. Joseph, Mich:ASAE. 15 p.
10. Morgan, M.T. Soil Sensor Update, 1996. InfoAg Conference. Urbana, IL. Oral (20 minutes).
11. Keener*, K.M., R.L. Stroshine*, J.A. Nyenhuis, and M.T. Morgan. 1996. Proton magnetic resonance measurement of self-diffusion coefficient of water in sucrose solutions, citric acid solutions, fruit juices, and apple tissue. ASAE Paper No. 96-6063. St. Joseph, Mich:ASAE. 16 p.
12. Whitman*, T.A., G.R. Wodicka, M.T. Morgan, and J.D. Bourland. 1996. Measurement and modeling of the vibrational response of the ovine head as it relates to intracranial pressure. Acoustical Society of America, 2 p.
13. Forrest* J.C., Sheiss*, E.B., M.T. Morgan*, D.E. Gerrard. 1997. Pork Quality Measurement Tools – Now and in the Future. Proceedings of Pork Quality & Safety Summit. Des Moines, IA. 17 p.
14. Morgan, M.T. 1997. Color Vision System and Tetra-polar Electrodes. Proceedings of Pork Quality & Safety Summit. Des Moines, IA. 15 p.
15. Morgan, M.T. 1998. Development of reference standards for pork quality. Proceedings of Pork Quality & Safety Summit. Des Moines, IA. 7 p.
16. Zhang*, M., L.I. Ludas*, M.T. Morgan, G.W. Krutz*, and C.J. Precetti. 1998. Applications of color machine vision in the agricultural and food industries. SPIE. Boston, MA. 13p.
17. Adamchuk*, V.I., M.T. Morgan*. 1999. Automated measurement of soil properties. Presented at InfoAg99 Conference, W. Lafayette, IN. (Poster session).
18. Adamchuk*, V. I., M.T. Morgan*, H. Sumali. 2000. Estimation of soil resistance using a strain gauge array. ASME conference paper. 21p.
19. Bhunia*, A.K., Z.W. Jaradat*, K. Naschansky*, M. Shroyer, M. Morgan, R. Gomez, R. Bashir, and M. Ladisch. 2001. Impedance spectroscopy and biochip sensor for detection of *Listeria monocytogenes*. Proceedings of SPIE Vol.4206:32-39.
20. Adamchuk*, V.I., M.T. Morgan*, and H. Sumali. 2001. Mapping of Spatial and Vertical Variation of Soil Mechanical Resistance Using a Linear Pressure Model. Paper No. 01-1019. Presented at the 2001 ASAE Annual International Meeting, Sacramento, California. 13 p.
21. Adamchuk*, V.I., M.T. Morgan, and J.M. Lowenberg-DeBoer. 2001. Agro-economic Evaluation of Intense Soil pH Mapping. ASAE Paper No. 01-1045. St. Joseph, Mich:ASAE. 14 p.
22. Adamchuk, V.I., D.B. Marx, and M.T. Morgan. 2002. Numeric assessment of soil mapping value: Part I. Error evaluation. In: Proceedings of the Sixth International Conference on Precision Agriculture. P.C. Robert, ed., 818-832. Madison, Wisconsin: ASACSSA-SSSA (CD publication, editorial board review).
23. Walukonis*, C.J., M.T. Morgan, D.E. Gerrard, J.C. Forrest. 2002. A technique for predicting water-holding capacity in early postmortem muscle. 55th Reciprocal Meat Conference. East Lansing, MI. 4 p. poster.

24. Adamchuk, V.I., A. Dobermann, M.T. Morgan and S.Brouder. 2002. Feasibility of On-the-go Mapping of Soil Nitrate and Potassium Using Ion-Selective Electrodes. ASAE Paper No. 02-1183, ASAE, St. Joseph, MI.
25. Bhunia, A, R. Bashir, M.T. Morgan, 2002. Cell-based biosensor detection of Listeria in Foods. USDA Food Safety and Engineering Center project report, Philadelphia, PA.
26. Sethuramasamyraja, B., V.I. Adamchuk, and M.T. Morgan. 2004. Dynamic analysis of ion-selective electrode response for mapping soil properties on-the-go. Paper No. MC04-206. St. Joseph, Michigan: ASAE.
27. Bhunia, A.K., T. Geng, A. Lathrop, A. Valadez, and M. Morgan. 2004. Optical immunosensor for detection of Listeria monocytogenes and Salmonella Enteritidis from food. Proceedings of SPIE, 5271-01.
28. Morgan, M.T., B. Paxson, Q. Xu, and P.E. Nelson. 2006. CIFM to Certify Manufacturing Equipment to EHEDG Guidelines / Chlorine Dioxide Sterilization of an Aseptic Processing System. Intra-University Pharmaceutical Technology & Education Workshop. April 19, 2006.

2. Invited Presentations:

1. Electromagnetic sensing of pork quality. 1993. 65th Annual Indiana Electric Technology Conference, Lafayette, IN. (Attendance: 35).
2. Dielectric measurement of pork quality. 1993. Purdue-Nebraska Meat Science Consortium, Sioux Center, IA. (Attendance: 20).
3. Sensing of pork quality. 1995. STAGES Breeders Roundtable, Lafayette, IN. (Attendance: 45).
4. Future sensors for food process control. 1995. Nestle R&D Control Symposium, Marysville, OH. (Attendance: 12).
5. Meat quality research update: electrical properties of porcine muscle. 1995. Purdue-Nebraska Meat Science Consortium, University of Nebraska-Lincoln, NE. (Attendance: 15).
6. Color vision analysis of meat quality. 1996. Purdue-Nebraska Meat Science Consortium, Lincoln, NE. (Attendance: 15).
7. On-the-go soil properties measurements. 1999. Conservation Tillage & Technology Conference. Ada, OH. (Attendance: approximately 500).
8. Economics of high resolution soil properties maps. 2000. Conservation Tillage & Technology Conference. Ada, OH. (Attendance: Approximately 500).
9. Soil sensors for Precision Ag. 2000. 33rd annual Top Farmer Crop Workshop. Lafayette, IN. (Attendance: 70).

a. National Meeting Symposium Chairman/Organizer

1. Conference of Food Engineers (COFE), Chicago, IL, 1993, co-organizer of poster session. "Sensors in food processing."
2. Chairman/organizer for session at annual meeting of ASAE, Nashville, Tennessee. 1996. "Educational methods in food process design and control."
3. Chairman/organizer for session at annual meeting of ASAE. Minneapolis, Minnesota. 1997. "Instrumentation and Control."

C. EXTENSION, SERVICE AND UNIVERSITY OUTREACH

1. Outreach Information Provided

Dr. Morgan has been actively involved in extension workshops in the Food Science Department since 2003. He has provided lectures on thermal processing regulation topics for the Better Process Control School (2004, 2005, 2006); HACCP roundtable by Dr. Linton in 2004; Gatorade workshops in 2002, 2003; Pepsi Beverages workshop in 2004,2005 and Aseptic processing Workshop in 2005,2006. Each of these workshops has included either lecture or lecture and laboratory exercises on thermal processing, instrumentation and control systems.

Dr. Morgan also directs the Center for Integrated Food Manufacturing in the Department of Food Science. As the director, Dr. Morgan has pursued the development of a laboratory for the evaluation and certification of equipment to meet the European Hygienic Engineering & Design Group (EHEDG) guidelines. This laboratory will be the only one in the U.S. where processing equipment can be certified for cleanability based on the EHEDG guidelines. After obtaining ISO 17025 accreditation, the laboratory will be able to test equipment for the food industry and open the opportunity for sales of such equipment to the European Union. Funds to develop this hygienic design laboratory were obtained from the Center for Advanced Manufacturing at Purdue (B.4.b.6).

2. Extension Publications

Ess, D.R., M.T. Morgan, and S. D. Parsons. 2001. Implementing site-specific management: map- versus sensor-based variable rate application, Purdue University Cooperative Extension Service Bulletin SSM-2-W, 9 p.

3. University, School and Departmental Committees.

- a. Agricultural Systems Management curriculum committee, 1992-94.
- b. Agricultural Engineering curriculum committee, 1994-96, 2001 and Chair 2001.
- c. Agricultural Engineering graduate committee, 1993-98.
- d. School of Agriculture grade appeals committee, 1993-95.
- e. Animal Science faculty search committee, 1994.
- f. ABE Department head search committee, 1994-95.
- g. Freshman Engineering curriculum committee, 1995.
- h. Schools of Engineering grade appeals committee, 1995-97.
- i. ASEE student club - advisory committee member, 1995-1998.
- j. Faculty search committees in ABE Department, 1995 and chair 2000.
- k. ABE Department, advisory committee, chair 1997-98.
- l. School of Agriculture grievance committee, 1998-99.
- m. ABE Department facilities committee, 1998-present.
- n. ABE Department course evaluation taskforce, Chair 2000
- o. Food Science Department, three faculty search committees 1996-1997, 2002.
- p. Computer-Integrated Food Manufacturing Center (CIFMC) committee in the Food Science Department. 1996-present. Member of Director search committee 1992, 1997, 2002.
- q. Search committee of Associate Dean of Agriculture, Research, 1997-1998.
- r. ABE Department Student Recruiting Committee, 2000-2002
- s. ABE Department Coordinator for ABE and FPE Student Advising, 2000-2002.
- t. University Senate representative 2005-present
 - a. Chair of University Faculty Affairs committee – 2005,2006

- u. FS Department faculty search committee chair, 2004-2005
- v. FS Department facilities committee, 2003-present
- w. FS Department undergraduate curriculum committee, 2004-present
 - a. Chair 2005-present
- x. FS Department industry interactions committee, 2005-present
- y. FS Department outcomes assessment committee, 2005-present

4. Professional Society/Organization Service

- a. North Central Regional Research Committee (NCR-153), Sensor Technology Development for Biological Systems, representative 1992-1993.
- b. ASAE FPE-703 committee, Food Processing, member since 1993.
- c. ASAE P-211 committee, Student Club Advisors, member 1992-1995.
- d. ASAE IET-353 committee, Instrumentation and controls, member since 1994.
- e. ASAE P-202. Education Steering, member 1997-1999.
- f. ASAE P-207 committee Student Organizations, member 1996-2000.
- g. NC-136/NC-1023 Improvement of Thermal and Alternative Processes for Foods, rep. 2003-present

5. Offices Held in State, National or International Societies.

- a. ASAE
 - (1) P207 Student Organizations committee: Vice Chair, 1997; Chair, 1998.
 - (2) P 207/1 Advisors to Student Branches, Chairman, 1995-1997.
 - (3) FPE-703 Food Process Engineering: Secretary, 1996; Vice Chair, 1997; and Chair, 1998.
- b. ISA
 - (1) Program director and founding member of Lafayette Section of Instrument Society of America (2004-present)
- c. NC-1023 Improvement of Thermal and Alternative Processes for Foods: Secretary 2006.
- d. IFT Indiana section: President-elect 2006.