

# 2003

## ANNUAL REPORT



*Michigan Agricultural Experiment Station*

*Michigan State University*





# 2003 Annual Report

*This annual report not only highlights the research activities within the  
Michigan Agricultural Experiment Station,  
it recognizes the people making that research happen.*

## **Michigan Agricultural Experiment Station**

**109 Agriculture Hall  
Michigan State University  
East Lansing, MI 48824-1039**

**517-355-0123**

**[maesdir@msu.edu](mailto:maesdir@msu.edu)**

**<http://www.maes.msu.edu>**

Report prepared under the direction of J. Ian Gray, director of the Michigan Agricultural Experiment Station,  
and Debbie McCaffrey, administrative assistant.

Design by Christine Altese; editing and production by Robin Millsap,  
MAES information officer, ANR Communications.

All photos by Harley Seeley and Kurt Stepnitz, MSU photographers, unless otherwise noted.

Cover: Pine cone photo by Bert Cregg

## Partnerships to Benefit Michigan

- ◆ **Sensors to maintain homeland security by detecting harmful diseases in food and water.**
- ◆ **New techniques to control mosquitoes without chemicals.**
- ◆ **Research reports detailing the unique needs and concerns of grandparents who are raising their grandchildren.**
- ◆ **A new potato variety that is resistant to potato late blight, a devastating disease; the new potato is expected to save billions of dollars each year and reduce chemical use.**

**I**n 2003, the Michigan Agricultural Experiment Station (MAES) funded research on these hugely critical issues that impact our state and our country. The MAES strengthened and expanded our partnerships with non-MAES scientists across Michigan State University, funding work that supports the MAES mission and solves Michigan's problems. We also enhanced our network of partnerships with state agencies and private organizations and industry to ensure objective research results are incorporated quickly and efficiently into policies and procedures. These close ties also ensure that MAES scientists know first-hand the issues and concerns confronting the state.

The MSU Product Center for Agriculture and Natural Resources, established in March 2003, is one example of the benefits to Michigan that result from MAES partnerships and flexibility. A collaboration between the MAES, MSU Extension and the College of Agriculture and Natural Resources, the center's mission is to foster a profitable future for the state's agricultural, food and natural resource systems businesses. By providing proactive market research capabilities, the center increases the opportunities for success for value-added ventures.

In May, the MSU Center for Animal Functional Genomics organized the first International Symposium on Animal Functional Genomics. Co-chaired by MAES animal scientists Jeanne Burton and Guilherme J.M. Rosa, the symposium was extremely successful; participants asked that MSU host another in 2005.

### A Reflection of our Scientists' Success

The success of the MAES is due to the caliber of the scientists that are funded and the quality of their work. MAES scientists Michael Thomashow and James Tiedje were elected to the National Academy of Sciences (NAS) in 2003, an elite

group of approximately 2,000 members. Acceptance into the NAS is one of the highest honors a scientist can receive. Thomashow has identified the plant genes that control cold and drought tolerance. Tiedje's research has pioneered the use of molecular techniques to understand the nature and significance of microbial diversity in soils and sediment.

Thomas Whittam, Hannah Distinguished Professor and MAES food science and human nutrition, microbiology and molecular genetics researcher, received a \$10.2 million grant from the National Institutes of Health. Whittam is leading the MSU team that will explore the genetics of microorganisms that cause food and waterborne diseases. The scientists will collaborate with researchers at the University of Michigan, the University of Maryland and the Michigan Department of Community Health.



Dr. J. Ian Gray

Photo by Erin Groom

### New Department Chairs

The MAES welcomes three new chairpersons: Steve Hanson in the Department of Agricultural Economics; Walter Esselman in the Department of Microbiology and Molecular Genetics; and Sheila Ferguson-Miller in the Department of Biochemistry and Molecular Biology. We thank Larry Hamm, William Smith and Jerry Dodgson for their diligence and expertise during their tenures as chairs.

MAES Associate Director Jan Bokemeier was named transition director of the newly created Department of Community, Agriculture, Recreation and Resource Studies in the College of Agriculture and Natural Resources.

### Research for Michigan's Future

The MAES appreciates the support of our constituents and partners and looks forward to continuing to provide strategic, useful research to benefit our state and our world.

J. Ian Gray  
Director

## The MAES Mission

The Michigan Agricultural Experiment Station generates knowledge through strategic research to enhance agriculture, natural resources and families and communities in Michigan.

This mission, productively executed by more than 300 researchers in five colleges at Michigan State University, has enabled the MAES to be one of the most successful agricultural experiment stations in the country. This accomplishment is fueled by close ties with MSU Extension, state agencies, and commodity groups and other stakeholders, as well as outstanding legislative support.

The challenges facing Michigan agriculture and natural resources are increasingly complex and diverse. MAES research programs are continuously evaluated for relevance and progress. A strategic visioning process, linked to those of MAES-affiliated colleges at MSU (Agriculture and Natural Resources, Veterinary Medicine, Human Ecology, Social Science and Natural Science), has identified five target areas that will drive the MAES research agenda over the next decade. These target areas address the research priorities of Michigan agriculture and natural resources industries, but are also linked to national goals and new initiatives.

They are:

- ◆ **Food and Health. Microbial and chemical food safety, nutritional enhancement of foods (biofortification), nutritional immunology, consumer choice and diet, food security, nutrition, and epidemiology.**
- ◆ **Environmental Stewardship and Natural Resources Policy and Management. Land use, land cover policy and research, air quality, soil conservation, waste management and utilization of waste products, landscape ecology, ecosystem management, and water research (quality, watershed management, and water use for agriculture and natural resources businesses).**
- ◆ **Enhancing Profitability in Agriculture and Natural Resources. Basic research in the plant and animal sciences to reduce dependency on chemicals and enhance resistance to diseases, insects and environmental stresses integrated crop management (biological control, applied chemical ecology), and the identification and development of value-added agriculture opportunities for the state of Michigan.**
- ◆ **Secure Food and Fiber System. Basic and applied research on new, emerging and re-emerging infectious diseases, invasive species (insects, plants, pathogens and aquatic animals), and agro-security.**
- ◆ **Families and Community Vitality. Community and economic development, recreation/tourism, youth, aging, family dynamics, demographics, and rural and urban community security.**

This research will result in profitable Michigan agriculture and natural resources industries, enhanced rural and urban community development, and strong and healthy families. As programs develop, the MAES strives to maintain a balance between applied and basic research and relies heavily on the input of its constituents in identifying research priorities.

# *Michigan Agricultural Experiment Station*

As of 10-1-2003

**J. Ian Gray**, Director

**Janet L. Bokemeier**, Associate Director

**Gary D. Lemme**, Associate Director

**Doreen K. Woodward**, Assistant Director

**Debbie McCaffrey**, Administrative Assistant

**Candace Ebbinghaus**, Support Staff

**Linda Haubert**, Support Staff

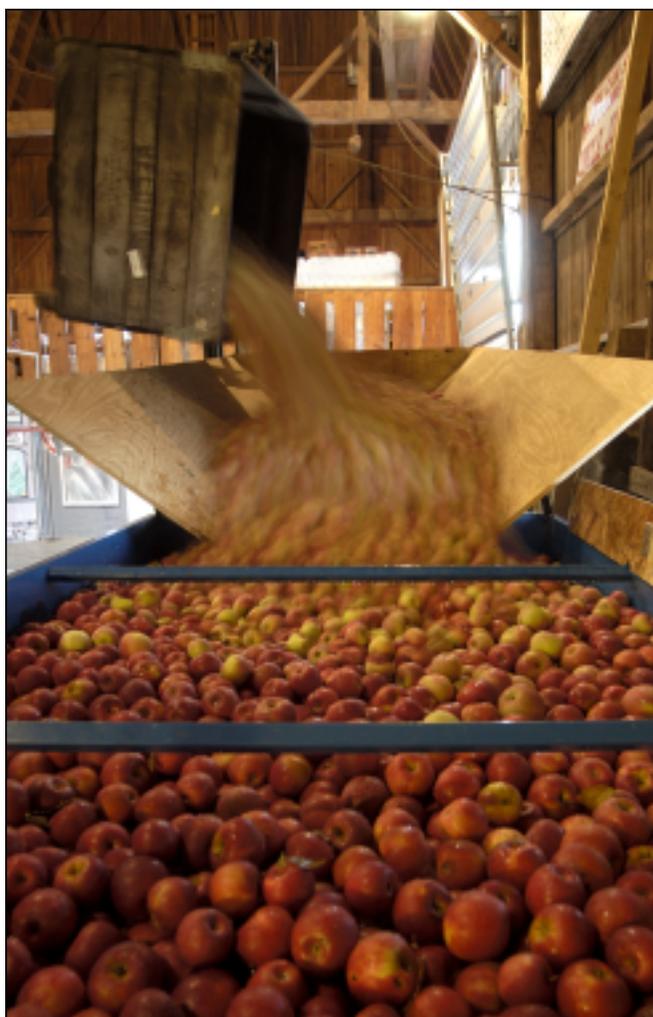
**Martha Lovejoy**, Support Staff

**Alice Noel**, Support Staff

**Isidra Pérez**, Support Staff



Photo by Dave Douches



## *MAES Affiliated Deans*

As of 10-1-2003

**Jeffrey D. Armstrong**, Dean  
College of Agriculture & Natural Resources

**Julia R. Miller**, Dean  
College of Human Ecology

**George E. Leroi**, Dean  
College of Natural Science

**Marietta L. Baba**, Dean  
College of Social Science

**Lonnie J. King**, Dean  
College of Veterinary Medicine

# ***MAES Unit Administrators***

*(Units receiving base funding)*

As of 10-1-2003

**Steven D. Hanson**, Chairperson  
Agricultural Economics

**Ajit K. Srivastava**, Chairperson  
Agricultural Engineering

**Margaret E. Benson**, Acting Chairperson  
Animal Science

**Kirk L. Heinze**, Chairperson  
ANR Education and Communication Systems

**Shelagh Ferguson-Miller**, Chairperson  
Biochemistry and Molecular Biology

**Douglas D. Buhler**, Chairperson  
Crop and Soil Sciences

**Richard W. Merritt**, Acting Chairperson  
Entomology

**Lillian A. Phenice**, Acting Chairperson  
Family and Child Ecology

**William W. Taylor**, Chairperson  
Fisheries and Wildlife

**Mark A. Uebersax**, Chairperson  
Food Science and Human Nutrition

**Daniel E. Keathley**, Chairperson  
Forestry

**Richard E. Groop**, Chairperson  
Geography

**Ronald L. Perry**, Chairperson  
Horticulture

**Sally I. Helvenston**, Chairperson  
Human Environment and Design

**Michael J. Klug**, Director  
Kellogg Biological Station

**Charles J. Reid**, Director  
Land Management

**Thomas H. Herdt**, Chairperson  
Large Animal Clinical Sciences

**Walter J. Esselman**, Chairperson  
Microbiology and Molecular Genetics

**Ewen C. D. Todd**, Director  
National Food Safety and Toxicology Center

**Bruce R. Harte**, Director  
Packaging (School of)

**Joseph D. Fridgen**, Chairperson  
Park, Recreation and Tourism Resources

**Willie M. Reed**, Chairperson  
Pathobiology and Diagnostic Investigation

**William S. Spielman**, Chairperson  
Physiology

**Richard E. Triemer**, Chairperson  
Plant Biology

**Raymond Hammerschmidt**, Chairperson  
Plant Pathology

**Kenneth Keegstra**, Director  
Plant Research Laboratory (MSU-DOE)

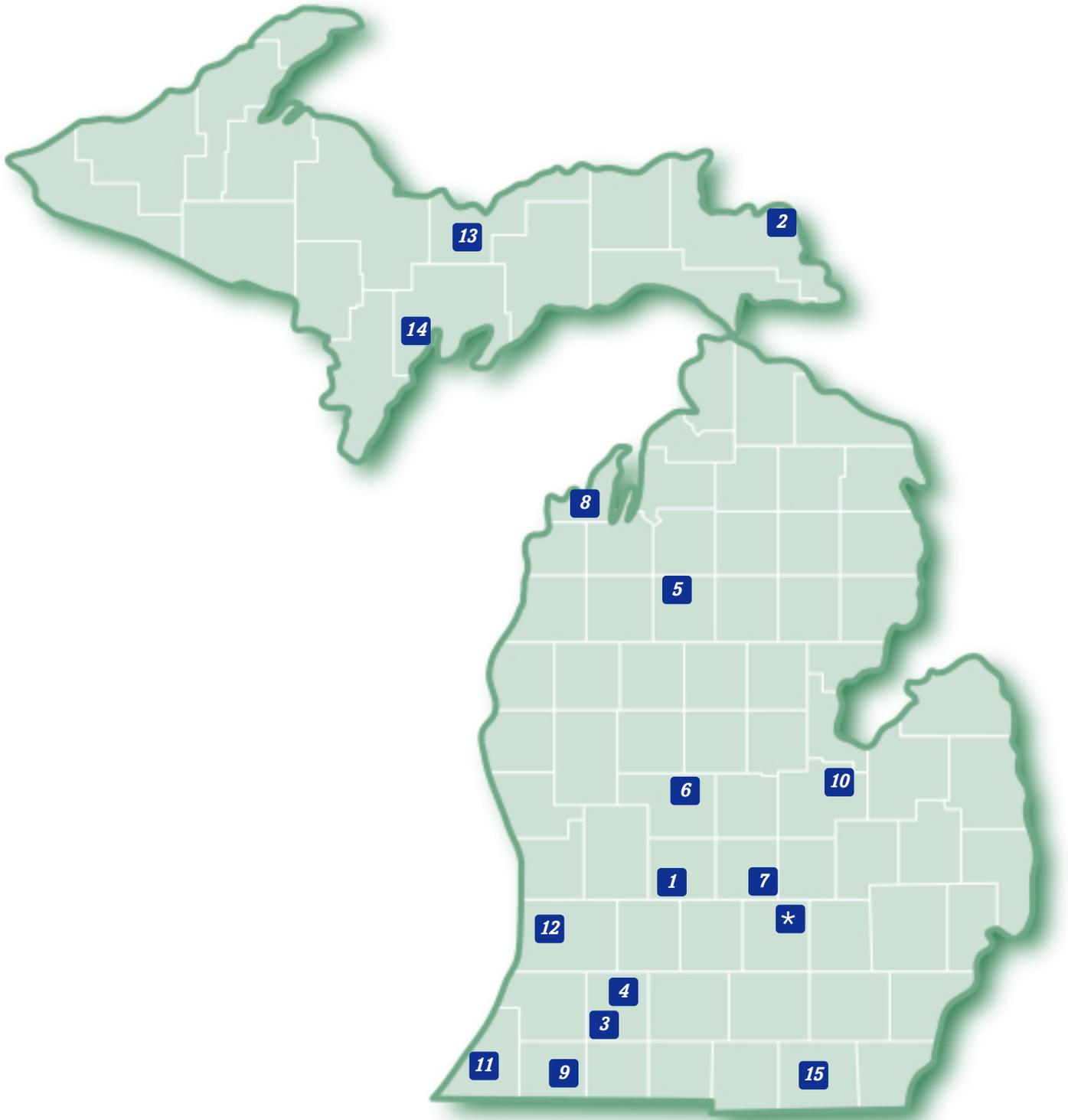
**Scott G. Witter**, Acting Chairperson  
Resource Development

**Gary R. Anderson**, Director  
Social Work (School of)

**Steven J. Gold**, Acting Chairperson  
Sociology

**Jon F. Bartholic**, Director  
Water Research (Institute of)

# Michigan Agricultural Experiment Station Outlying Stations — 10-1-2003



- 1. CLARKSVILLE HORTICULTURAL EXPERIMENT STATION**  
*Established 1974*  
 9302 Portland Road  
 Clarksville, MI 48815  
 Phone: 616-693-2193  
 FAX: 616-693-2317  
 Gerald Skeltis  
*Farm Manager*  
 Phil Schwallier  
*Coordinator*
- 2. DUNBAR FOREST EXPERIMENT STATION**  
*Established 1925*  
 12839 S. Scenic Drive  
 Rt. 1, Box 179  
 Sault Ste. Marie, MI 49783  
 Phone: 906-632-3932 or  
 906-786-1575  
 Ray Miller  
*Nonresident Forester*
- 3. W. K. KELLOGG BIOLOGICAL STATION**  
*Established 1928*  
 3700 E. Gull Lake Drive  
 Hickory Corners, MI 49060  
 FAX: 269-671-2351  
 Bernie Knezek 517-355-0271  
*Director, Agricultural Programs*  
 Kay Gross 269-671-2341  
*Interim Director, Programs and Development*
- 4. W. K. KELLOGG EXPERIMENTAL FOREST**  
*Established 1932*  
 7060 N. 42nd Street  
 Augusta, MI 49012  
 Phone: 269-731-4597  
 FAX: 269-731-4597  
 Greg Kowalewski  
*Resident Forester*
- 5. LAKE CITY EXPERIMENT STATION**  
*Established 1928*  
 5401 W. Jennings Road  
 Lake City, MI 49651  
 Phone: 231-839-4608  
 FAX: 231-839-8663  
 Doug Nielsen  
*Farm Manager*
- 6. MONTCALM RESEARCH FARM**  
*Established 1966*  
 4747 McBride Road  
 Lakeview, MI 48850  
 Phone: 989-365-3473  
 FAX: 989-365-3473  
 Richard Crawford  
*Research Technician*
- 7. MUCK SOILS RESEARCH FARM**  
*Established 1941*  
 Rt. 3  
 9370 E. Herbison Road  
 Laingsburg, MI 48848  
 Phone: 517-641-4062  
 Ron Gnagey  
*Farm Manager*
- 8. NORTHWEST MICHIGAN HORTICULTURAL RESEARCH STATION**  
*Established 1979*  
 6686 S. Center Highway  
 Traverse City, MI 49684  
 Phone: 231-946-1510  
 FAX: 231-946-1404  
 Bill Klein  
*Farm Manager*  
 James Nugent  
*Coordinator*
- 9. FRED RUSS FOREST EXPERIMENT STATION**  
*Established 1942*  
 20673 Marcellus Highway  
 Decatur, MI 49045  
 Phone: 269-782-5652 or  
 269-731-4597  
 Greg Kowalewski  
*Nonresident Forester*
- 10. SAGINAW VALLEY BEET AND BEAN RESEARCH FARM**  
*Established 1971*  
 3066 S. Thomas Road  
 Saginaw, MI 48609  
 Phone: 989-781-1160  
 FAX: 989-781-5282  
 Paul Horny  
*Farm Manager*
- 11. SOUTHWEST MICHIGAN RESEARCH AND EXTENSION CENTER**  
*Established 1987*  
 1791 Hillandale Road  
 Benton Harbor, MI 49022  
 Phone: 269-944-1477  
 FAX: 269-944-3106  
 Dave Francis  
*Farm Manager*  
 Thomas Zabadal  
*Coordinator*
- 12. TREVOR NICHOLS RESEARCH COMPLEX**  
*Established 1967*  
 6237 124th Avenue  
 Fennville, MI 49408  
 Phone: 269-561-5040  
 FAX: 269-561-5314  
 Matthew Daly  
*Farm Manager*  
 John Wise  
*Coordinator*
- 13. UPPER PENINSULA EXPERIMENT STATION**  
*Established 1899*  
 P.O. Box 168  
 E3774 University Drive  
 Chatham, MI 49816  
 Phone: 906-439-5114  
 FAX: 906-439-5698  
 Paul Naasz  
*Operations Supervisor*
- 14. UPPER PENINSULA TREE IMPROVEMENT CENTER**  
*Established 1986*  
 6005 J Road  
 Escanaba, MI 49829  
 Phone: 906-786-1575  
 FAX: 906-786-9370  
 Ray Miller  
*Resident Forester*
- 15. MSU MERILLAT EQUINE CENTER**  
*Established 1997*  
 2828 Wolf Creek Highway  
 Adrian, MI 49221  
 Phone: 517-265-6779  
 FAX: 517-263-9294  
 John Shelle  
*Coordinator*
- ★ **EAST LANSING FIELD RESEARCH FACILITIES**  
*Established 1888*  
 109 Agriculture Hall  
 East Lansing, MI 48824-1039  
 Phone: 517-355-3272  
 FAX: 517-353-5406  
 Charles J. Reid  
*Director, Land Management*

# Alphabetical List of MAES Scientists

As of 10-1-2003

Faculty members with dual MAES appointments are listed in both of the departments in which they serve.

NAME	UNIT
Adams, Gerard C.	Plant Biology
Adams, Gerard C.	Plant Pathology
Allen, Michael S.	Animal Science
Allison, Richard F.	Plant Biology
Allison, Richard F.	Plant Pathology
Alocilja, Evangelyn C.	Agricultural Engineering
Ayers, George S.	Entomology
Bagdasarian, Michael	Microbiology & Molecular Genetics
Balander, Richard J.	Animal Science
Bates, Ronald O.	Animal Science
Batie, Sandra S. <sup>1</sup>	Agricultural Economics
Beaudry, Randolph M.	Horticulture
Beckwith, JoAnn	Resource Development
Beede, David K. <sup>5</sup>	Animal Science
Behe, Bridget K.	Horticulture
Bence, James R. <sup>6</sup>	Fisheries & Wildlife
Benning, Christoph	Biochemistry & Molecular Biology
Bennink, Maurice R.	Food Science & Human Nutrition
Benson, Margaret E.	Animal Science
Berglund, Kris A.	Agricultural Engineering
Bickert, William G.	Agricultural Engineering
Biernbaum, John A.	Horticulture
Bingen, R. James	Resource Development
Bird, George W.	Entomology
Bitsch, Vera	Agricultural Economics
Bix, Laura	Packaging (School of)
Black, J. Roy	Agricultural Economics
Bolin, Carole A.	Pathobiology & Diagnostic Investigation
Bolin, Steven R.	Pathobiology & Diagnostic Investigation
Booren, Alden M.	Food Science & Human Nutrition
Bourquin, Leslie D.	Food Science & Human Nutrition
Boyd, Stephen A.	Crop & Soil Sciences
Bremigan, Mary T. <sup>6</sup>	Fisheries & Wildlife
Breznak, John A.	Microbiology & Molecular Genetics
Bristow, Catherine	Entomology
Bronstein, Daniel A.	Resource Development
Bucholtz, Herbert F.	Animal Science
Bughrara, Suleiman S.	Crop & Soil Sciences
Bursian, Steven J.	Animal Science

NAME	UNIT
Burton, Jeanne L.	Animal Science
Burton, Zachary F.	Biochemistry & Molecular Biology
Busch, Lawrence M.	Sociology
Buskirk, Daniel D.	Animal Science
Cameron, Arthur C.	Horticulture
Campa, Henry III	Fisheries & Wildlife
Champness, Wendy C.	Microbiology & Molecular Genetics
Cheney, Laura L.	Agricultural Economics
Chou, Karen	Animal Science
Clarke, Robert H.	Packaging (School of)
Claycombe, Kate	Food Science & Human Nutrition
Coe, Paul H.	Animal Science
Coussens, Paul M.	Animal Science
Crawford, Eric W.	Agricultural Economics
Cregg, Bert M.	Horticulture
Crum, James L.	Crop & Soil Sciences
Dazzo, Frank B.	Crop & Soil Sciences
Dazzo, Frank B.	Microbiology & Molecular Genetics
Della Penna, Dean	Biochemistry & Molecular Biology
Dickmann, Donald I.	Forestry
DiFonzo, Christina D.	Entomology
Dilley, David R.	Horticulture
Dodgson, Jerry	Microbiology & Molecular Genetics
Dolan, Kirk D.	Agricultural Engineering
Dolan, Kirk D.	Food Science & Human Nutrition
Dong, Ke	Entomology
Douches, David S.	Crop & Soil Sciences
Doumit, Matthew E.	Animal Science
Doumit, Matthew E.	Food Science & Human Nutrition
Downes, Theron W.	Packaging (School of)
Epperson, Bryan K.	Forestry
Ernst, Catherine W.	Animal Science
Erskine, Ronald J.	Large Animal Clinical Sciences
Fernandez, Rodney	Horticulture
Ferris, Theodore A.	Animal Science
Flore, James A.	Horticulture
Fogwell, Ralph L.	Animal Science
Fraker, Pamela J.	Biochemistry & Molecular Biology
Fraker, Pamela J.	Food Science & Human Nutrition
Frank, Kevin W.	Crop & Soil Sciences

NAME	UNIT
Freed, Russell D.	Crop & Soil Sciences
Friedman, Steven K.	Forestry
Friedman, Steven K.	Geography
Fulbright, Dennis W.	Plant Pathology
Gage, Stuart H.	Entomology
Gangur, Venugopal	Food Science & Human Nutrition
Garling, Donald L.	Fisheries & Wildlife
Gerrish, John B.	Agricultural Engineering
Giesy, John P.	National Food Safety & Toxicology Center
Grafius, Edward J.	Entomology
Grooms, Daniel L.	Large Animal Clinical Sciences
Grumet, Rebecca	Horticulture
Gut, Larry	Entomology
Guyer, Daniel E.	Agricultural Engineering
Hamm, Michael W. <sup>2</sup>	Crop & Soil Sciences
Hamm, Michael W. <sup>2</sup>	Food Science & Human Nutrition
Hamm, Michael W. <sup>2</sup>	Resource Development
Han, Kyung-Hwan	Forestry
Hancock, James F.	Horticulture
Hanson, Eric J.	Horticulture
Harkema, Jack	Pathobiology & Diagnostic Investigation
Harris, Craig K.	Sociology
Harsh, Stephen B.	Agricultural Economics
Hart, James B., Jr.	Forestry
Hart, L. Patrick	Plant Pathology
Hausbeck, Mary K.	Plant Pathology
Hausinger, Robert P.	Biochemistry & Molecular Biology
Hausinger, Robert P.	Microbiology & Molecular Genetics
Hayes, Daniel B. <sup>6</sup>	Fisheries & Wildlife
He, Sheng-Yang	Plant Research Laboratory (MSU-DOE)
Heins, Royal D.	Horticulture
Hill, Gretchen M.	Animal Science
Hoehn, John P.	Agricultural Economics
Hoerr, Sharon M.	Food Science & Human Nutrition
Holecek, Donald F.	Park, Recreation, & Tourism Resources
Hollingsworth, Rawle I.	Biochemistry & Molecular Biology
Hollingsworth, Robert M.	Entomology
Horan, Richard D.	Agricultural Economics
Hord, Norman G.	Food Science & Human Nutrition
Howe, Gregg A.	Plant Research Laboratory (MSU-DOE)
Howell, Gordon S.	Horticulture
Huang, Zachary	Entomology

NAME	UNIT
Iezzoni, Amy F.	Horticulture
Imig, David R.	Family & Child Ecology
Ireland, James J.	Animal Science
Isaacs, Rufus	Entomology
Jacobs, Lee W.	Crop & Soil Sciences
Jarosz, Andrew M.	Plant Biology
Jarosz, Andrew M.	Plant Pathology
Johnson, Nan E.	Sociology
Jones, Michael L. <sup>6</sup>	Fisheries & Wildlife
Jump, Donald B.	Physiology
Kaguni, Jon M.	Biochemistry & Molecular Biology
Kakela, Peter J.	Resource Development
Kamdem, Donatien-Pascal	Forestry
Kaneene, John B.	Large Animal Clinical Sciences
Kaplowitz, Michael C.	Resource Development
Keith, Joanne G.	Family & Child Ecology
Kells, James J., Jr.	Crop & Soil Sciences
Kelly, James D.	Crop & Soil Sciences
Kielbaso, Julian J.	Forestry
Kirk, William W.	Plant Pathology
Kirkwood, Roy N.	Large Animal Clinical Sciences
Klug, Michael J.	Microbiology & Molecular Genetics
Knezek, Bernard D.	Crop & Soil Sciences
Kobe, Richard K.	Forestry
Kravchenko, Alexandra N.	Crop & Soil Sciences
Kroos, Lee R.	Biochemistry & Molecular Biology
La Pres, John J.	Biochemistry & Molecular Biology
Laboski, Carrie A. M.	Crop & Soil Sciences
Landis, Douglas A.	Entomology
Lang, Gregory A.	Horticulture
Lang, Nancy Suzanne	Horticulture
Leefers, Larry A.	Forestry
Leep, Richard H.	Crop & Soil Sciences
Lenski, Richard E. <sup>3</sup>	Crop & Soil Sciences
Li, Weiming <sup>6</sup>	Fisheries & Wildlife
Linz, John E.	Food Science & Human Nutrition
Liu, Jianguo	Fisheries & Wildlife
Lloyd, James W.	Agricultural Economics
Loescher, Wayne H.	Horticulture
Loudon, Theodore L.	Agricultural Engineering
Lownds, Norman K.	Horticulture
Lupi, Frank <sup>6</sup>	Agricultural Economics
Lupi, Frank <sup>6</sup>	Fisheries & Wildlife
MacFarlane, David	Forestry
Maes, Roger K.	Microbiology & Molecular Genetics
Malmström, Carolyn	Plant Biology

NAME	UNIT	NAME	UNIT
Mansfield, Linda S.	Large Animal Clinical Sciences	Pursley, James R.	Animal Science
Marks, Bradley P.	Agricultural Engineering	Pysarchik, Dawn I.	Human Environment & Design
Matuana, Laurent M.	Forestry	Raper, Kellie K.	Agricultural Economics
Maurer, Brian A. <sup>6</sup>	Fisheries & Wildlife	Reddy, C. Adinarayana	Microbiology & Molecular Genetics
McCullough, Deborah G.	Entomology	Renner, Karen A.	Crop & Soil Sciences
McDonough, Maureen H.	Forestry	Riley, Shawn J.	Fisheries & Wildlife
Meek, Katheryn	Pathobiology & Diagnostic Investigation	Roberson, Kevin D.	Animal Science
Melakeberhan, Haddish	Entomology	Robertson, G. Phillip	Crop & Soil Sciences
Merritt, Richard W.	Entomology	Robinson, Norman E.	Large Animal Clinical Sciences
Millenbah, Kelly F.	Fisheries & Wildlife	Robison, Lindon J.	Agricultural Economics
Miller, James R.	Entomology	Rogers, John N. III	Crop & Soil Sciences
Mohanty, Amar K.	Packaging (School of)	Romsos, Dale R.	Food Science & Human Nutrition
Mokma, Delbert L.	Crop & Soil Sciences	Rook, Joseph S.	Large Animal Clinical Sciences
Myers, Robert S.	Agricultural Economics	Rosa, Guilherme J. M.	Animal Science
Nair, Muraleedharan G.	Horticulture	Rosenbaum, Rene P.	Resource Development
Nelson, Charles M.	Park, Recreation, & Tourism Resources	Rothstein, David E.	Forestry
Ng, Perry K. W.	Food Science & Human Nutrition	Rowe, D. Bradley	Horticulture
Ngouajio, Mathieu	Horticulture	Rozeboom, Dale W.	Animal Science
Nielsen, Brian D.	Animal Science	Rudy, Alan P.	Sociology
Norris, Patricia E.	Agricultural Economics	Rugh, Clayton L.	Crop & Soil Sciences
Norris, Patricia E.	Resource Development	Runkle, Eric S.	Horticulture
Northcott, William J.	Agricultural Engineering	Rust, Steven R.	Animal Science
Oehmke, James F.	Agricultural Economics	Ryser, Elliott T.	Animal Science
Ofoli, Robert Y.	Food Science & Human Nutrition	Ryser, Elliott T.	Food Science & Human Nutrition
Ohlrogge, John B.	Plant Biology	Safir, Gene R.	Plant Pathology
Olsen, Larry G.	Entomology	Sang, Tao	Plant Biology
Olson, Beth	Food Science & Human Nutrition	Schemske, Douglas W. <sup>3</sup>	Horticulture
Orth, Michael W.	Animal Science	Schiamberg, Lawrence R.	Family & Child Ecology
Osburn, Wesley N.	Animal Science	Schilder, Annemiek C.	Plant Pathology
Osburn, Wesley N.	Food Science & Human Nutrition	Schindler, Melvin S.	Biochemistry & Molecular Biology
Osteryoung, Katherine W.	Plant Biology	Schmid, A. Allan	Agricultural Economics
Patterson, Jon S.	Pathobiology & Diagnostic Investigation	Schmidt, Thomas M.	Microbiology & Molecular Genetics
Peacor, Scott D.	Fisheries & Wildlife	Schultink, Gerhardus	Resource Development
Penner, Donald	Crop & Soil Sciences	Schutzki, Robert E.	Horticulture
Pestka, James J.	Food Science & Human Nutrition	Schwab, Gerald D.	Agricultural Economics
Peterson, H. Christopher <sup>7</sup>	Agricultural Economics	Schweikhardt, David B.	Agricultural Economics
Peyton, R. Benny <sup>6</sup>	Fisheries & Wildlife	Scriber, J. Mark	Entomology
Poff, Ken	Horticulture	Scribner, Kim T. <sup>6</sup>	Fisheries & Wildlife
Potter-Witter, Karen L.	Forestry	Sears, Barbara B.	Plant Biology
Prather, L. Alan	Plant Biology	Sears, Phillip M.	Large Animal Clinical Sciences
Preiss, Jack	Biochemistry & Molecular Biology	Seita, John R.	Social Work (School of)
Prince, Harold H.	Fisheries & Wildlife	Singh, Sher Paul	Packaging (School of)
Propst, Dennis B.	Park, Recreation, & Tourism Resources	Sink, Kenneth C.	Horticulture
		Skole, David L.	Geography
		Slocum, Ann C.	Human Environment & Design
		Smith, George W.	Animal Science

NAME	UNIT
Smitley, David R.	Entomology
Smucker, A.J.M.	Crop & Soil Sciences
Snapp, Sieglinde S.	Crop & Soil Sciences
Snapp, Sieglinde S.	Horticulture
Sontag, M. Suzanne	Human Environment & Design
Soranno, Patricia A.	Fisheries & Wildlife
Sprague, Christy L.	Crop & Soil Sciences
Staatz, John S.	Agricultural Economics
Steffe, James F.	Agricultural Engineering
Steffe, James F.	Food Science & Human Nutrition
Stehr, Frederick W.	Entomology
Sternquist, Brenda J.	Human Environment & Design
Strasburg, Gale M.	Food Science & Human Nutrition
Straw, Barbara E.	Large Animal Clinical Sciences
Stynes, Daniel J.	Park, Recreation, & Tourism Resources
Sundin, George W.	Plant Pathology
Surbrook, Truman C.	Agricultural Engineering
Suvedi, Murari	ANR Education & Communication Systems
Swinton, Scott M.	Agricultural Economics
Tempelman, Robert J.	Animal Science
Teppen, Brian J.	Crop & Soil Sciences
Thelen, Kurt D.	Crop & Soil Sciences
Thiem, Suzanne	Entomology
Thomashow, Michael F.	Crop & Soil Sciences
Thomashow, Michael F.	Microbiology & Molecular Genetics
Thornsbury, Suzanne D.	Agricultural Economics
Tiedje, James M.	Crop & Soil Sciences
Tiedje, James M.	Microbiology & Molecular Genetics
Trail, Frances	Plant Pathology
Triezenberg, Steven J.	Biochemistry & Molecular Biology
Trottier, Nathalie L.	Animal Science
Ustunol, Zeynep	Food Science & Human Nutrition
Van Ee, Gary R.	Agricultural Engineering
van Nocker, Steven R.	Horticulture
VandeHaar, Michael J.	Animal Science
Vander Stoep, Gail A.	Park, Recreation, & Tourism Resources
Vargas, Joseph M., Jr.	Plant Pathology
Vogt, Christine A.	Park, Recreation, & Tourism Resources
Walker, Edward D.	Entomology
Walters, Michael B. <sup>6</sup>	Forestry
Walton, Jonathan D.	Plant Research Laboratory (MSU-DOE)
Wang, Dechun	Crop & Soil Sciences

NAME	UNIT
Wang, John L.	Biochemistry & Molecular Biology
Ward, Richard W.	Crop & Soil Sciences
Warncke, Darryl D.	Crop & Soil Sciences
Watson, J. Throck	Biochemistry & Molecular Biology
Weatherspoon, Dave D.	Agricultural Economics
Weber, Michael T.	Agricultural Economics
Weber-Nielsen, Miriam S.	Animal Science
Whalon, Mark E.	Entomology
Whipple, Judith M.	Agricultural Economics
Whittam, Thomas S. <sup>3</sup>	Food Science & Human Nutrition
Whittam, Thomas S. <sup>3</sup>	Microbiology & Molecular Genetics
Williams, Kurt	Pathobiology & Diagnostic Investigation
Winterstein, Scott R.	Fisheries & Wildlife
Witter, Scott G.	Resource Development
Wolf, Christopher A.	Agricultural Economics
Woods, Michael D.	ANR Education & Communication Systems
Yin, Runsheng	Forestry
Yokoyama, Melvin T.	Animal Science
Zabadal, Thomas J.	Horticulture
Zacharewski, Timothy R.	Biochemistry & Molecular Biology
Zandstra, Bernard H.	Horticulture
Zanella, Adroaldo J.	Animal Science
Zile, Maija H.	Food Science & Human Nutrition

- <sup>1</sup> Elton R. Smith Professor in Food and Agricultural Policy
- <sup>2</sup> C.S. Mott Distinguished Professor of Sustainable Agriculture
- <sup>3</sup> John A. Hannah Distinguished Professor
- <sup>4</sup> Homer Nowlin Chair of Water in Agricultural and Natural Resources Systems
- <sup>5</sup> Clinton E. Meadows Endowed Chair
- <sup>6</sup> Partnerships for Ecosystem Research and Management (PERM) positions with salary funded by the Michigan Department of Natural Resources
- <sup>7</sup> Homer Nowlin Chair of Consumer Responsive Agriculture
- <sup>8</sup> Meadow Brook Endowed Chair

# MAES Scientists and Projects by Department

The names listed here represent faculty members who have an MAES appointment and are in the tenure stream as of 10-1-2003.

Faculty members with dual MAES appointments are listed in both of the departments in which they serve.

SCIENTISTS	PROJECTS
MAES = Michigan Agricultural Experiment Station	Projects listed are as of 10-1-2003.
MSUE = Michigan State University Extension	
Joint = Joint appointment in an MAES-affiliated College or Department	*Signifies Multistate Project
12 = Professor	
13 = Associate Professor	
14 = Assistant Professor	

## Agricultural Economics

Phone: 355-4563



Steven D. Hanson, Chair

FACULTY	RANK	MAES	MSUE	JOINT	INTEREST
Batie, Sandra S. <sup>1</sup>	12	0.60	0.20	0.20	Food & Agriculture Policy
Bitsch, Vera	14	0.30	0.55	0.15	Human Resources & Farm Management
Black, J. Roy	12	0.80	0.00	0.20	Farm Management
Cheney, Laura L.	13	0.50	0.50	0.00	Livestock Industry Management
Crawford, Eric W.	12	0.40	0.35	0.25	International Development
Harsh, Stephen B.	12	0.20	0.65	0.15	Farm Management
Hoehn, John P.	12	0.70	0.00	0.30	Natural Resources & Environmental Economics
Horan, Richard D.	14	0.80	0.00	0.20	Natural Resources & Environmental Economics
Lloyd, James W.	12	0.20	0.00	0.80	Livestock Production/Health Management/Food Safety
Lupi, Frank <sup>6</sup>	13	0.15	0.42	0.43	Fisheries & Wildlife Economics
Myers, Robert S.	12	0.80	0.00	0.20	International Trade & Price Analysis
Norris, Patricia E.	13	0.12	0.30	0.58	Land Use Management/Public Resource Economics
Oehmke, James F.	12	0.75	0.00	0.25	Price Analysis & Research Policy
Peterson, H. Christopher <sup>7</sup>	12	0.80	0.00	0.20	Food & Agribusiness Management
Raper, Kellie K.	14	0.75	0.00	0.25	Livestock Industry Marketing Economist
Robison, Lindon J.	12	0.65	0.00	0.35	Social Capital Theory
Schmid, A. Allan	12	0.60	0.00	0.40	Land Economics/Public Policy
Schwab, Gerald D.	12	0.20	0.50	0.30	Farm Management
Schweikhardt, David B.	12	0.25	0.40	0.35	Food, Agricultural & Trade Policy
Staatz, John S.	12	0.25	0.00	0.75	International Development
Swinton, Scott M.	12	0.70	0.00	0.30	Production Economics
Thornsbury, Suzanne D.	14	0.40	0.50	0.10	Food System Marketing
Weatherspoon, Dave D.	13	0.40	0.00	0.60	Food & Agribusiness Management
Weber, Michael T.	12	0.80	0.00	0.20	International Development
Whipple, Judith M.	13	0.30	0.20	0.50	Food & Agribusiness Management
Wolf, Christopher A.	13	0.50	0.50	0.00	Dairy Farm Management Economics
<b>TOTALS:</b>		<b>12.92</b>	<b>5.07</b>	<b>8.01</b>	

### PROJECTS

MICL01530*	Fruit and Vegetable Supply-Chain Management, Innovations, and Competitiveness	Thornsbury, S.
MICL01625	Financial Decision Making and Investment in Agriculture	Hanson, S.
MICL01635	Collective Action in Agriculture, Natural Resources and Rural Development	Schmid, A.
MICL01642*	Impacts of Structural Change in the Dairy Industry	Wolf, C.
MICL01732	Political Economy of National and International Agricultural Policies and Policy Decision Processes	Schweikhardt, D.

## Agricultural Economics (continued)

### PROJECTS

MICL01770	Economic Analysis of Public Policies Affecting the Performance of Michigan Agriculture	Batie, S.
MICL01788	Economic Analysis of Tactical and Operational Decisions on Michigan Farms and the Design/Development of Information Systems to Support These Decisions	Harsh, S.
MICL01790	Structural Adjustments in Michigan's Beef and Crop Sectors With Risk Management Considerations	Black, J.
MICL01815	The Political Economy of Agribusiness Structure, Agricultural Research, and the Biotechnology Industry	Oehmke, J.
MICL01844	Risk Analysis and Management in U.S. Agriculture	Myers, R.
MICL01850	Incentives for and Impacts of Land Use Change	Norris, P.
MICL01889	Social Capital, Terms of Trade, and the Internalization of Externalities	Robison, L.
MICL01891*	Financing Agriculture and Rural America: Issues of Policy, Structure and Technical Change	Hanson, S.
MICL01905	Agricultural Production Economics and Environmental Risk Management	Swinton, S.
MICL01925	Agribusiness Competitiveness: Strategies for Vertical Coordination and Customer Responsiveness	Peterson, C.
MICL01949	Global Ag-Biotech Trade and Marketing Research	Weatherspoon, D.
MICL01960	Structural Change, Competition, and Marketing Challenges in Agricultural and Livestock Industries	Raper, K.
MICL01963	Economics of Fishery and Wildlife Management	Lupi, F.
MICL01989	The Economics of Managing Environmental Resources	Horan, R.
MICL02006*	Impact Analysis and Decision Strategies for Agricultural Research	Oehmke, J.
MICL02014	Human Resources Management in Agriculture	Bitsch, V.
MICL02045*	Rural Communities, Rural Labor Markets and Public Policy	Bitsch, V.
MICL02049*	Benefits and Costs of Natural Resources Policies Affecting Public and Private Lands	Hoehn, J.
MICL02070	Produce Markets and Global Competitiveness	Thornsbury, S.
MICL03356	Vertical Coordination in the Agri-Food System and the Structure of Animal Agriculture	Cheney, L.
MICL03381	Strategic Management in Agribusiness Using Key Performance Indicators	Lloyd, J.
MICL03384	Assessing the Economic Structure, Performance, Visibility and Competitiveness of the Michigan Dairy Industry	Wolf, C.
MICL03385	The Impact of Efficient Consumer Response on Michigan Food Manufacturers and Retailers	Whipple, J.
MICL03387	Agricultural Economics Research on International Agricultural Development and the Environment	Weber, M.
MICL08260	The Economics of Green Payments to Reduce Agricultural Non-Point Source Pollution	Horan, R.

## Agricultural Engineering

Phone: 355-4720



Ajit K. Srivastava,  
Chair

### FACULTY

	RANK	MAES	MSUE	JOINT	INTEREST
Alocilja, Evangelyn C.	14	0.60	0.00	0.40	Systems Modeling/Early Detection & Control for Food Safety, Biosensors
Berglund, Kris A.	12	0.49	0.00	0.51	Bioprocess/Biotechnology
Bickert, William G.	12	0.20	0.80	0.00	Livestock Facilities/Environment/Manure Management
Dolan, Kirk D.	14	0.25	0.00	0.75	Food Engineering/Value Added Processing/Plant Products
Gerrish, John B.	12	0.40	0.00	0.60	Electronics/Odor Control
Guyer, Daniel E.	12	0.25	0.75	0.00	Fruit/Vegetable Storage/Handling
Loudon, Theodore L.	12	0.30	0.70	0.00	Irrigation/Waste Water Treatment
Marks, Bradley P.	13	0.60	0.00	0.40	Biosystems Engineering/ Food Safety-Meat Products
Northcott, William J.	14	0.40	0.00	0.60	Watershed Hydrology/Water Quality/ GIS Applications

# Agricultural Engineering (continued)

## FACULTY

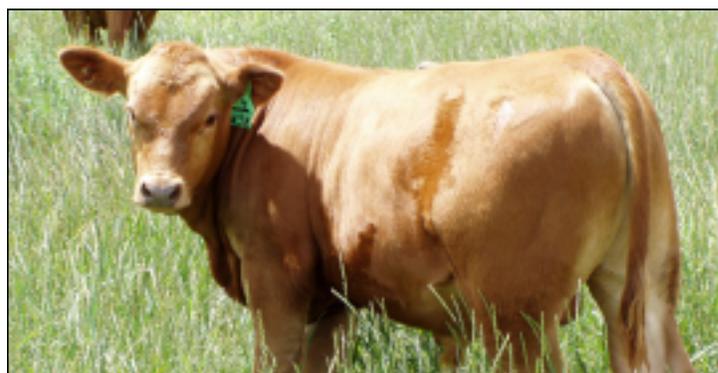
Steffe, James F.	12	0.35	0.00	0.65	Food Engineering/Rheology
Surbrook, Truman C.	12	0.25	0.00	0.75	Electrical Technology/Stray Voltage
Van Ee, Gary R.	12	0.65	0.00	0.35	Chemical Application/Power & Machinery
<b>TOTALS:</b>		<b>4.74</b>	<b>2.25</b>	<b>5.01</b>	

## PROJECTS

MICL01245*	Improvement of Thermal and Alternative Processes for Foods	Steffe, J.
MICL01581	Postharvest Technology for Quality Control and Enhancing Value From Fruits and Vegetables	Guyer, D.
MICL01787	Improving Onsite and Decentralized Wastewater Treatment and Disposal	Loudon, T.
MICL01799	Integrating Alternative Manure Treatments into Conventional Animal Manure Handling and Storage Systems	Bickert, W.
MICL01862	Neutral-To-Earth Voltage Reduction on Livestock Farms	Surbrook, T.
MICL01914	Irrigation and Waste Management Research in a Systems Context	von Bernuth, R.
MICL01935	Laser Spectroscopy for Analysis of Crystallization Processes	Berglund, K.
MICL01967	Engineering Methods to Optimize the Safety, Yield, and Quality of Value-Added Protein Foods	Marks, B.
MICL01972	Methods for Improving Water Quality in Agricultural Watersheds	Northcott, W.
MICL02004*	Animal Manure and Waste Utilization, Treatment and Nuisance Avoidance for a Sustainable Agriculture	von Bernuth, R.
MICL02007	Development of Lab-On-Chip Biosensor for Food and Environmental Safety and Biosecurity	Alocilja, E.
MICL02041*	Assuring Fruit and Vegetable Product Quality and Safety Through the Handling and Marketing Chain	Guyer, D.
MICL07658	Achieving Lethality Performance Standards for Fully-Cooked Meat Products	Marks, B.
MICL07666	Biobased Technology	Srivastava, A.
MICL08245	Light Frequency Analysis, Fluorescence and Neural Networks for Fruit and Vegetable Quality Evaluation	Guyer, D.
MICL08247	Chemiluminescence Detection of Microbial Contaminants on Fresh Produce	Alocilja, E.
MICL08255	Incorporating Humidity into Microbial Inactivation Models for Convection Cooking of Meats	Marks, B.
MICL08313	Optimizing the Design and Operation of Commercial Cooking Systems for Ready-To-Eat Meat and Poultry Products	Marks, B.

## Animal Science

Phone: 355-8383



Margaret E. Benson,  
Acting Chair

## FACULTY

	RANK	MAES	MSUE	JOINT	INTEREST
Allen, Michael S.	12	0.50	0.50	0.00	Forage Nutrition
Balander, Richard J.	13	0.40	0.00	0.60	Avian Physiology/Reproduction
Bates, Ronald O.	13	0.20	0.80	0.00	Swine Genetics/Management
Beede, David K. <sup>5</sup>	12	0.50	0.40	0.10	Dairy Nutrition/Dairy Management
Benson, Margaret E.	12	0.20	0.50	0.30	Ruminant Nutrition/Sheep
Bucholtz, Herbert F.	12	0.15	0.70	0.15	Dairy Nutrition/Management

**FACULTY**

Bursian, Steven J.	12	0.85	0.00	0.15	Avian Physiology/Toxicology
Burton, Jeanne L.	13	0.80	0.00	0.20	Molecular Genetics/Dairy Cattle
Buskirk, Daniel D.	13	0.50	0.50	0.00	Ruminant Nutrition/Beef
Chou, Karen	13	0.80	0.00	0.20	Toxicology
Coe, Paul H.	13	0.20	0.00	0.80	Animal Health
Coussens, Paul M.	12	0.80	0.00	0.20	Molecular Biology
Doumit, Matthew E.	13	0.25	0.00	0.75	Meat Science/Muscle Biology
Ernst, Catherine W.	14	0.80	0.00	0.20	Meat Animal Genetics
Ferris, Theodore A.	12	0.20	0.80	0.00	Dairy Genetics
Fogwell, Ralph L.	12	0.30	0.00	0.70	Reproductive Physiology
Hill, Gretchen M.	12	0.75	0.00	0.25	Swine Nutrition
Ireland, James J.	12	0.95	0.00	0.05	Reproductive Physiology
Nielsen, Brian D.	13	0.60	0.00	0.40	Equine Exercise Physiology
Orth, Michael W.	13	0.80	0.00	0.20	Turkey Nutrition/Growth Biology
Osburn, Wesley N.	13	0.25	0.00	0.75	Meat Science
Pursley, James R.	13	0.20	0.80	0.00	Reproductive Management
Roberson, Kevin D.	14	0.35	0.65	0.00	Poultry Nutrition/Management
Rosa, Guilherme J. M.	14	0.50	0.00	0.50	Population Genetics
Rozeboom, Dale W.	13	0.15	0.65	0.20	Swine Nutrition/Management
Rust, Steven R.	12	0.50	0.50	0.00	Beef Feedlot Nutrition
Ryser, Elliott T.	14	0.17	0.00	0.83	Dairy Manufacturing/Microbiology
Smith, George W.	13	0.75	0.00	0.25	Reproductive Physiology
Tempelman, Robert J.	13	0.50	0.00	0.50	Statistics
Trottier, Nathalie L.	13	0.75	0.00	0.25	Swine Nutrition/Management
VandeHaar, Michael J.	12	0.65	0.00	0.35	Dairy Nutrition
Weber-Nielsen, Miriam S.	14	0.30	0.00	0.70	Dairy Management
Yokoyama, Melvin T.	12	0.85	0.00	0.15	Animal Nutrition/Microbiology
Zanella, Adroaldo J.	13	0.75	0.00	0.25	Ethology/Stress Physiology
<b>TOTALS:</b>		<b>17.22</b>	<b>6.80</b>	<b>9.98</b>	

**PROJECTS**

MICL01182*	Molecular Mechanisms Regulating Skeletal Muscle Growth and Differentiation	Doumit, M.
MICL01573	The Role of Inhibin in Bovine Reproduction	Ireland, J.
MICL01604	Increasing Efficiency of Protein Production in Dairy Cattle	VandeHaar, M.
MICL01622	Control Mechanisms of Male Reproduction and Sperm Fertilizing Ability	Chou, K.
MICL01643	Microbial Ecology of Rumen, Gastrointestinal Tract, Ensiled Feeds, Probiotics, and Livestock Waste	Yokoyama, M.
MICL01652*	Environmental and Economic Impacts of Nutrient Management on Dairy Forage Systems	Allen, M.
MICL01727	The Fate and Biological Effects of Xenobiotics in Animals	Bursian, S.
MICL01760	The Effects of Specific Nutrients on Nutrient Management, Health and Productivity of Swine	Hill, G.
MICL01800	Investigating Ways to Improve Utilization, and Reduce and Predict the Excretion of Phosphorus by Dairy Cattle	Beede, D.
MICL01802	Optimizing the Nutritional Utilization of Forages by Dairy Cattle	Allen, M.
MICL01803	Nutritional, Management and Other Applied Studies Using Poultry and Other Avian Species	Balander, R.
MICL01818*	Biophysical Models for Poultry Production Systems	Rahn, A.
MICL01822	Development and Application of Hierarchical Statistical Models to Inferential Problems in Animal Science	Tempelman, R.
MICL01823	Methods to Enhance Decision Making by Dairy Producers	Ferris, T.
MICL01836	Genetic and Physiological Factors Regulating the Neutrophil System in Parturient Dairy Cows	Burton, J.

# Animal Science (continued)

## PROJECTS

MICL01852	Improving Skeletal Health in Livestock and Companion Animals	Orth, M.
MICL01853	Early Experience and Animal Welfare	Zanella, A.
MICL01854	Optimizing Protein and Amino Acid Utilization	Trottier, N.
MICL01861	Management of Athletic Horses to Reduce Musculoskeletal Injuries and Improve Performance	Nielsen, B.
MICL01875	Using Milk Yield to Schedule Insemination in Dairy Cows	Fogwell, R.
MICL01877	Discovery and Evaluation of Genetic Factors That Influence Growth, Carcass Merit and Meat Quality of the Pig	Bates, R.
MICL01879	Pre- and Postharvest Processing Strategies to Improve the Quality and Safety of Meat and Poultry Products	Osburn, W.
MICL01880	Regulation of Skeletal Muscle Growth and Meat Quality	Doumit, M.
MICL01890	Mechanisms of Ovulation in Dairy Cattle	Smith, G.
MICL01913	Impact of Growth and Lactation on the Nutritional Needs and Economic Viability of the Sheep Flock	Benson, M.
MICL01928*	Reproductive Performance in Domestic Ruminants	Smith, G.
MICL01929	Identification and Evaluation of Genes Controlling Economically Important Traits in Pigs and Cattle	Ernst, C.
MICL01943	Nutritional and Managerial Strategies to Minimize Phosphorus Excretion from Poultry.	Roberson, K.
MICL01952	Increasing Efficiency of Milk Production in Dairy Cattle	Weber, M.
MICL01961	Factors That Limit Reproductive Success of Dairy Cattle	Pursley, J.
MICL01974*	Water Quality Issues in Poultry Production and Processing	Roberson, K.
MICL02033*	Management Systems to Improve the Economic and Environmental Sustainability of Dairy Enterprises	Beede, D.
MICL02034*	Metabolic Relationships in Supply of Nutrients for Lactating Cows	VandeHaar, M.
MICL02035*	Interpreting Cattle Genomic Data: Biology, Applications and Outreach	Burton, J.
MICL02038*	Methods to Increase Reproductive Efficiency in Cattle	Pursley, J.
MICL02043*	Genetic and Functional Genomic Approaches to Improve Production and Quality of Pork	Ernst, C.
MICL02058	Accounting for Genotyping Errors in Linkage Map and QTL Analyses.	Rosa, G.
MICL02071	Johne's Disease Pathogenesis and Host Response to <i>Mycobacterium paratuberculosis</i>	Coussens, P.
MICL03340	Nutrition and Feeding Management for Michigan Dairy Herds	Bucholtz, H.
MICL03360	Nutrition and Management Regimes for Efficient Feed Utilization by Beef Cattle	Buskirk, D.
MICL03366	Utilization of Genetic Resources for the Improvement of Livestock Populations	Banks, B.
MICL03374	Maximum Utilization of Michigan Grown Feedstuffs for Growing-Finishing Cattle	Rust, S.
MICL03402	Animal Functional Genomics	Coussens, P.
MICL06892	Neuroendocrine Regulation of the Stress Response in Cattle	Smith, G.
MICL06896	Glucosamine's Role in the Regulation of Metalloproteinases in Equine Cartilage	Orth, M.
MICL06901	Dynamics of Immune Responses to Johne's Disease in Infected and Vaccinated Calves	Coussens, P.
MICL06909	Use of Halothane Gas to Identify Novel SR Calcium Release Channel Protein Defects in Pigs	Doumit, M.
MICL08236	Inhibin Regulation of Intrafollicular Estradiol Production	Ireland, J.
MICL08261	How Do Glucocorticoids Regulate CD62l Gene Expression in Bovine Neutrophils?	Burton, J.
MICL08262	Intrafollicular Role of A2-Macroglobulin in Regulation of Estradiol Production	Ireland, J.
MICL08263	Neuroendocrine Regulation of the Stress Response in Cattle	Smith, G.
MICL08266	Functional Genomics of Well-Being and Milk Quality in Cattle	Coussens, P.
MICL08268	The Role of Hippocampal Glucocorticoids on Behavioral Responses to Stress in Pigs	Zanella, A.
MICL08274	Enhancing Management and Profitability on Small and Mid-Sized Dairy Farms	Pursley, J.
MICL08290	Intrafollicular Signaling Pathways That Control Follicle Rupture in Dairy Cattle	Smith, G.
MICL08299	Interaction of IGF-I and Leptin in Bovine Mammary Development	VandeHaar, M.

# ANR Education & Communication Systems

Phone: 355-6580



Kirk L. Heinze, Chair

## FACULTY

	RANK	MAES	MSUE	JOINT	INTEREST
Suvedi, Murari	13	0.25	0.50	0.25	Program Evaluation
Woods, Michael D.	14	0.25	0.00	0.75	Risk Communication in Agriculture & Natural Resources
<b>TOTALS:</b>		<b>0.50</b>	<b>0.50</b>	<b>1.00</b>	

## PROJECTS

MICL02050	The Impact of Communicating ANR Risks on Stakeholder Participation and Public Policy	Woods, M.
MICL03372	Evaluation of Area of Expertise (AOE) Team Approach to Applied Research and Extension in Michigan	Suvedi, M.



## Biochemistry & Molecular Biology

Phone: 355-1600



Shelagh Ferguson-Miller, Chair

## FACULTY

	RANK	MAES	MSUE	JOINT	INTEREST
Benning, Christoph	13	0.67	0.00	0.33	Plant Biochemistry
Burton, Zachary F.	12	0.20	0.00	0.80	Molecular Biology
Della Penna, Dean	12	0.25	0.00	0.75	Nutritional Genomics
Fraker, Pamela J.	12	0.30	0.00	0.70	Immunology
Hausinger, Robert P.	12	0.25	0.00	0.75	Enzymology
Hollingsworth, Rawle I.	12	0.25	0.00	0.75	Renewable Resource Chemistry
Kaguni, Jon M.	12	0.58	0.00	0.42	Molecular Biology
Kroos, Lee R.	12	0.54	0.00	0.46	Molecular Biology
La Pres, John J.	14	0.25	0.00	0.75	Functional Genomics
Preiss, Jack	12	0.25	0.00	0.75	Starch Biochemistry
Schindler, Melvin S.	12	0.35	0.00	0.65	Cell Biology
Triezenberg, Steven J.	12	0.20	0.00	0.80	Molecular Biology
Wang, John L.	12	0.20	0.00	0.80	Cell Biology
Watson, J. Throck	12	0.50	0.00	0.50	Analytical Biochemistry
Zacharewski, Timothy R.	13	0.20	0.00	0.80	Biochemical Toxicology
<b>TOTALS:</b>		<b>4.99</b>	<b>0.00</b>	<b>10.01</b>	

## Biochemistry & Molecular Biology (continued)

### PROJECTS

MICL01598	Gene Regulation During Development of Soil Bacteria	Kroos, L.
MICL01601	DNA Replication and Its Regulation in <i>Escherichia coli</i>	Kaguni, J.
MICL01608	Activation of Gene Expression by a Herpes Simplex Virion Protein	Triezenberg, S.
MICL01610	Functions of Transcription Factor IIF	Burton, Z.
MICL01754	Characterization of the Gap Junction Protein in Health and Disease	Watson, J.
MICL01781	Development of Starch-Based Microcellular Foamed Bioplastics	Schindler, M.
MICL01906	Identification and Assessment of Endocrine Disruptors	Zacharewski, T.
MICL01924	Dietary Zinc: Its Effects on the Immune Response	Fraker, P.
MICL01940	Regulation of Metabolism in Developing Seeds of Arabidopsis	Benning, C.
MICL01947	Symbiosis and the Metabolic Enzymes of <i>Rhizobium</i>	Hollingsworth, R.
MICL01973	Manipulation of Vitamin E Production in Plants	Della Penna, D.
MICL01997	The SMN Complex in Spinal Muscular Atrophy	Wang, J.
MICL02037	Regulation of Photosynthetic Processes	Preiss, J.
MICL07662	Bioprocessing for Utilization of Agricultural Raw Materials	Zeikus, J.
MICL07678	Bioprocessing for Utilization of Agricultural Resources	Zeikus, J.
MICL08253	Function of Glucose-6-Phosphate Dehydrogenase in Developing Oil Seeds	Benning, C.

## Chemical Engineering

Phone: 355-5135

### PROJECTS

MICL02047*	Science and Engineering for a Biobased Industry and Economy	Worden, R.
MICL08215	Condensed-Phase Catalytic Hydrogenation of Crop-Derived Organic Acids	Miller, D.
MICL08298	Novel High-Value Products from Biomass-Derived Organic Acids	Miller, D.

## Chemistry

Phone: 355-9715

### PROJECTS

MICL08258	Diamond Microelectrode Arrays: New Materials for the Electrochemical Detection of Aqueous Analytes	Swain, G.
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## Composite Materials & Structures Center

Phone: 353-5466

### PROJECTS

MICL08264	Bio-Composites from Engineered Bio-Fibers and Bio-Plastics	Drzal, L.
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# Crop & Soil Sciences

Phone: 355-0271



Photo by Dave Douches



Douglas D. Buhler, Chair

## FACULTY

	RANK	MAES	MSUE	JOINT	INTEREST
Boyd, Stephen A.	12	0.75	0.00	0.25	Environmental Soil Chemistry
Bughrara, Suleiman S.	14	0.75	0.25	0.00	Turfgrass Breeding & Genetics
Crum, James L.	12	0.15	0.00	0.85	Soil Class/Genesis/Turfgrass
Dazzo, Frank B.	12	0.10	0.00	0.90	Microbial Ecology
Douches, David S.	12	0.90	0.00	0.10	Potato Breeding/Genetics
Frank, Kevin W.	14	0.40	0.60	0.00	Turfgrass Management
Freed, Russell D.	12	0.34	0.00	0.66	International Agronomy/Plant Breeding
Hamm, Michael W. <sup>2</sup>	12	0.10	0.10	0.80	Sustainable Agriculture
Jacobs, Lee W.	12	0.50	0.50	0.00	Environmental Waste Management
Kells, James J., Jr.	12	0.25	0.60	0.15	Weed Science
Kelly, James D.	12	0.85	0.00	0.15	Dry Bean Breeding
Knezek, Bernard D.	12	0.50	0.00	0.50	Micronutrient/Waste Utilization
Kravchenko, Alexandra N.	14	0.50	0.00	0.50	Spatial Variability in Agroecosystems
Laboski, Carrie A. M.	14	0.40	0.60	0.00	Soil Fertility Management/Sugar Beet & Dry Bean Cropping Systems
Leep, Richard H.	12	0.35	0.50	0.15	Soil Fertility/Forage Management
Lenski, Richard E. <sup>3</sup>	12	0.40	0.00	0.60	Microbial Ecology & Evolutionary Biology
Mokma, Delbert L.	12	0.50	0.15	0.35	Soil Classification/Genesis
Penner, Donald	12	0.85	0.00	0.15	Crop/Weed/Physiology
Renner, Karen A.	12	0.25	0.00	0.75	Weed Seed Decay/Predation/Emergence
Robertson, G. Phillip	12	0.38	0.00	0.62	Ecosystem Ecology
Rogers, John N. III.	12	0.25	0.00	0.75	Turfgrass Management
Rugh, Clayton L.	14	0.25	0.00	0.75	Phytoremediation, Molecular & Cellular Genetics
Smucker, A.J.M.	12	0.75	0.00	0.25	Soil Biophysics
Snapp, Sieglinde S.	14	0.25	0.25	0.50	Integrated Production & Management of Vegetable Crops
Sprague, Christy L.	14	0.50	0.50	0.00	Weed Science
Teppen, Brian J.	13	0.75	0.00	0.25	Surface Soil Chemistry
Thelen, Kurt D.	14	0.40	0.60	0.00	Cropping Systems Agronomist
Thomashow, Michael F.	12	0.76	0.00	0.24	Plant & Microbial Molecular Genetics
Tiedje, James M.	12	0.60	0.00	0.40	Soil Microbiology/Microbial Ecology
Wang, Dechun	14	0.75	0.00	0.25	Soybean Geneticist
Ward, Richard W.	13	0.75	0.00	0.25	Wheat Breeding
Warncke, Darryl D.	12	0.50	0.50	0.00	Greenhouse/Vegetable Soil Fertility
<b>TOTALS:</b>		<b>15.73</b>	<b>5.15</b>	<b>11.12</b>	

# Crop & Soil Sciences (continued)

## PROJECTS

MICL00319	Classification, Genesis and Evaluation of Michigan Soils	Mokma, D.
MICL00569	Breeding and Testing Oats, Barley and Canola for Michigan	Freed, R.
MICL00908	Fundamental Factors in Cultural and Chemical Weed Control, Weed Competition, and Weed Life Cycles	Renner, K.
MICL01462*	Management of Eroded Soils for Enhancement of Productivity and Environmental Quality	Mokma, D.
MICL01471*	Chemistry and Bioavailability of Waste Constituents in Soils	Jacobs, L.
MICL01568	Plant Biotechnology: Molecular Approaches to Improve Environmental Stress Tolerance	Thomashow, M.
MICL01574	Movement and Degradation of Organic Contaminants and Pesticides in Soils and Sediments	Boyd, S.
MICL01617*	Characterizing Weed Population Variability for Improved Weed Management Decision Support Systems to Reduce Herbicide Use	Kells, J.
MICL01654	Genetic Improvement of Bean ( <i>Phaseolus vulgaris</i> L.) For Yield, Pest Resistance and Food Value	Kelly, J.
MICL01761	Weed Management as a Component of Field Crop Production Systems	Kells, J.
MICL01772*	Assessing Nitrogen Mineralization and Other Diagnostic Criteria to Refine Nitrogen Rates for Crops and Minimize Losses	Laboski, C.
MICL01779	The Physiology and Biochemistry of Herbicide Action, Selectivity, and Degradation	Penner, D.
MICL01780	Impact Absorption, Traction, and Wear Tolerance Investigation on Turf and Soil Surfaces	Rogers, J.
MICL01782	Application of Organic and Other Waste Residuals to Agricultural Soils as a Waste Management Option	Jacobs, L.
MICL01806	Breeding and Genetics for the Improvement of Potato ( <i>Solanum tuberosum</i> L.) For Yield, Quality and Pest Resistance	Douches, D.
MICL01807	Properties of High Sand Content Soils for Turfgrass Uses	Crum, J.
MICL01821	Microbial Ecology of Soil and Biodegradation	Tiedje, J.
MICL01830	Wheat Breeding and Genetics	Ward, R.
MICL01855	The Role of Mutation in Bacterial Evolution	Lenski, R.
MICL01872	Greenhouse Gas Mitigation and Carbon Sequestration in Row-Crop Agriculture	Robertson, G.
MICL01884	Soil Biophysical Mechanisms of Soil Aggregation	Smucker, A.
MICL01953	Fundamental Interactions of Soil Colloids with Environmental Chemicals	Teppen, B.
MICL01957*	Development of Pest Management Strategies for Forage Alfalfa Persistence	Leep, R.
MICL01965	Corn and Soybean Cropping Systems	Thelen, K.
MICL01975	Genetic and Turfgrass Breeding	Bughrara, S.
MICL01985*	Reducing the Potential for Environmental Contamination by Pesticides and Other Organic Chemicals	Boyd, S.
MICL01987	Improvement of Plants for Environmental Decontamination by Integrated Ecosystems and Biotechnological Approaches	Rugh, C.
MICL01990	Nitrogen Use and Fate in Turfgrass	Frank, K.
MICL02013	Genetic Improvement of Soybean for Food Value, Yield and Pest Resistance.	Wang, D.
MICL02015	Development and Correlation of Soil Test Procedures With Crop Yields and Plant Nutrient Contents	Warncke, D.
MICL02051	Quantitative Methods for Analyzing Spatial Variability of Soil Properties and Crop Yields	Kravchenko, A.
MICL03260	Forage Management Studies in Northern Michigan	Leep, R.
MICL03302	Management of Organic Soils for Crop Production	Warncke, D.
MICL03324	Environmental Impacts on Crop Growth and Development	Foster, E.
MICL03405	Seed Biology of Annual Weed Species in Turf and Agronomic Crop Systems	Buhler, D.
MICL07649	Improving the Sustainable Production of Speciality Crops	Kelly, J.
MICL07661	Sustainable Agriculture: Ecologically-Based Farming Systems	Harwood, R.
MICL07663	Improving the Sustainable Production of Speciality Crops	Kelly, J.

**PROJECTS**

MICL07669	Improved Production and Utilization Technology Through Variety Development	Douches, D.
MICL07673	Sustainable Agriculture 2002: Ecologically Based Nutrient Cycling and Systems Integration	Knezek, B.
MICL07674	Improving the Sustainable Production of Specialty Crops	Kelly, J.
MICL07682	Improving the Sustainable Production of Specialty Crops	Kelly, J.
MICL07684	Sustainable Agriculture: Expanding and Refining the Ecosystem Base	Buhler, D.
MICL08224	Mechanism of CBF Gene Regulation by Low Temperature	Thomashow, M.
MICL08244	An Integrated Assessment of the Bioavailability of Soil-Sorbed Pesticides	Boyd, S.
MICL08296	Mechanisms and Forces Controlling Pesticide Retention by Soil Clay Minerals	Teppen, B.



Photo by Dave Cappaert

## Entomology

Phone: 355-4663



**Richard W. Merritt,**  
Acting Chair

**FACULTY**

	RANK	MAES	MSUE	JOINT	INTEREST
Ayers, George S.	12	0.25	0.00	0.75	IPM/Apiculture & Pollination
Bird, George W.	12	0.22	0.59	0.19	Nematode Community Structure in Relation to Soil Quality/Nematode Management
Bristow, Catherine	13	0.30	0.00	0.70	Ecology of Social Insects
DiFonzo, Christina D.	13	0.20	0.65	0.15	Field Crop Entomology/Pesticide Education Coordinator
Dong, Ke	13	0.25	0.00	0.75	Insect Toxicology & Neurobiology
Gage, Stuart H.	12	0.48	0.12	0.40	Computational Ecology, Bioinformatics
Grafius, Edward J.	12	0.20	0.65	0.15	Vegetable Insect Ecology Management
Gut, Larry	13	0.25	0.65	0.10	Tree Fruit Insects
Hollingworth, Robert M.	12	0.62	0.11	0.27	Pesticide Toxicology/Action, Insecticide Resistance, NRSP 4 Program
Huang, Zachary	14	0.21	0.53	0.26	Apiculture
Isaacs, Rufus	14	0.45	0.45	0.10	Small Fruit Insect Management
Landis, Douglas A.	12	0.66	0.18	0.16	Insect Ecology, Biological Control
McCullough, Deborah G.	13	0.30	0.50	0.20	Forest Entomology
Melakeberhan, Haddish	13	0.20	0.00	0.80	Physiology of Plant Nematode Interactions/Genetic Diversity
Merritt, Richard W.	12	0.50	0.00	0.50	Aquatic Insect Ecology
Miller, James R.	12	0.42	0.00	0.58	Insect Behavior, Physiology
Olsen, Larry G.	13	0.20	0.80	0.00	Agrimedecine/PIAP Program
Scriber, J. Mark	12	0.50	0.00	0.50	Insect Ecology

# Entomology (continued)

Smitley, David R.	12	0.25	0.60	0.15	Landscape/Turf/Greenhouse Insect Management
Stehr, Frederick W.	12	0.40	0.00	0.60	Insect Biocontrol, Systematics
Thiem, Suzanne	13	0.40	0.00	0.60	Insect Molecular Biology/Pathology
Walker, Edward D.	13	0.29	0.00	0.71	Medical/Veterinary Entomology
Whalon, Mark E.	12	0.60	0.00	0.40	Fruit Insect Pest Management/Insecticide Resistance Management
<b>TOTALS:</b>		<b>8.15</b>	<b>5.83</b>	<b>9.02</b>	

## PROJECTS

MICL01067*	Impact of Climate and Soils on Crop Selection and Management	Gage, S.
MICL01584*	Biologically Based IPM Systems for Management of Plant-Parasitic Nematodes	Bird, G.
MICL01606	Mitigating Outbreaks of Japanese Beetle and European Chafer in Michigan Through Host Plant Resistance and Introduction of Natural Enemies	Smitley, D.
MICL01640*	Ecology and Management of European Corn Borer and Other Stalk-Boring Lepidoptera	DiFonzo, C.
MICL01644	Plant Chemical Defenses: Insect Detoxification and Ecological Factors Affecting Gene Flow and Host Selection in Generalist Lepidoptera	Scriber, J.
MICL01663	Biology and Management of Insect Pests of Vegetable Crops	Grafius, E.
MICL01700	Ecology and Management of Forest Insects in Michigan	McCullough, D.
MICL01730*	A National Agricultural Program to Clear Pest Control Agents for Minor Uses	Hollingworth, R.
MICL01733	Mechanisms of Baculovirus Pathogenesis in Insects	Thiem, S.
MICL01741*	Persistence of Heterodera Glycines and Other Regionally Important Nematodes	Bird, G.
MICL01745	The A. J. Cook Arthropod Research Collection	Stehr, F.
MICL01783	Arthropod Biological Control	Landis, D.
MICL01792	Physiological Basis for Integrated Approach Towards Sustainable Management of Plant-Parasitic Nematodes	Melakeberhan, H.
MICL01813*	Genetic Variability in the Cyst and Root-Knot Nematodes	Melakeberhan, H.
MICL01814	Applied Behavioral Ecology of Insects	Miller, J.
MICL01826	Development of Bee Forage Systems	Ayers, G.
MICL01915	Large Scale Assessment of Insect Populations From an Ecosystem Management Perspective	Gage, S.
MICL01936	Molecular Characterization of Knock-Down Resistance in Agriculturally Important Insect Pests	Dong, K.
MICL01942	Shifts in Ant Communities in Response to Habitat and Management Regime	Bristow, C.
MICL01951	Better Pest and Disease Management Through Studying Their Mode of Action and Effect on Honey Bees	Huang, Z.
MICL01971	Ecology and Management of Insects in Michigan's Small Fruit Industries	Isaacs, R.
MICL01986	Tree Fruit IPM/ICM and Pesticide Regulatory Policy in Michigan	Whalon, M.
MICL02052*	Dynamic Soybean Pest Management for Evolving Agricultural Technologies and Cropping Systems	DiFonzo, C.
MICL03338	Ecology and Management of Arthropod Vector Populations and Vector-Borne Diseases	Walker, E.
MICL03361	Monitoring the Effects of Human Perturbations on Aquatic Habitats Using Freshwater Invertebrates	Merritt, R.
MICL03365	Biology and Management of Insects, and Assessment of Pesticide Use/ Exposure in Michigan Field Crops	DiFonzo, C.
MICL03379	New Arthropod Pest Controls and Management Strategies for Michigan Tree Fruit Production Systems	Gut, L.
MICL07643	Insecticide Mitigation Strategies for the High Risk High Value Michigan Blueberry Crop	Isaacs, R.
MICL07659	NC Region IR-4 Leader Lab Program to Clear Pest Control Agents for Minor Uses	Hollingworth, R.
MICL07667	Safeguarding the Supply of Speciality Crops for the Consumer	Gut, L.
MICL07677	Safeguarding the Supply of Fruit Crops for Consumers	Gut, L.
MICL07683	Mating Disruption, Monitoring, and Alternative Management of Tree Fruit Pests	Brewer, M.

# Entomology (continued)

## PROJECTS

MICL08238	Role of PA Technology in Biological and Environmental Monitoring of Potato IPM	Bird, G.
MICL08242	North Central Region Pest Management Center	Olsen, L.
MICL08259	Assessing the Relationships Among Cover Crops, Weed Seed Predators and Weed Communities	Landis, D.
MICL08267	Is Corn Phenology Causing Crop Rotation's Failure to Manage Western Corn Rootworm?	Landis, D.
MICL08277	Developing a Blueberry IPM Program to Address Critical Insect Management Issues	Isaacs, R.
MICL08278	Implementation of an IPM Decision Support System for Plum Curculio in Processed Cherries	Whalon, M.
MICL08284	Field Test of an Alternative Method for Controlling the Most Serious Honey Bee Pest, the Varroa Mite	Huang, Z.
MICL08289	Methyl Bromide Alternatives Research-Education for Herbaceous Perennial-Woody Ornamentals and Vegetables in MI, NY and RI	Bird, G.
MICL08297	Parasitism in Grass-Dominant Agroecosystems Affected by Landscape Structure	Brewer, M.
MICL08306	Molecular Mechanism of High Level Resistance to Imidacloprid in the Colorado Potato Beetle	Hollingworth, R.



## Family & Child Ecology

Phone: 355-7680



Lillian A. Phenice,  
Acting Chair

## FACULTY

	RANK	MAES	MSUE	JOINT	INTEREST
Imig, David R.	12	0.25	0.00	0.75	Family Ecology
Keith, Joanne G.	12	0.10	0.80	0.10	Human Development/Family
Schiemberg, Lawrence R.	12	0.28	0.00	0.72	Human Development/Family
<b>TOTALS:</b>		<b>0.63</b>	<b>0.80</b>	<b>1.57</b>	

## PROJECTS

MICL01841	Identification and Evaluation of Internal and External Assets in the Lives of Children, Adolescents, Their Families and Communities	Keith, J.
MICL01897*	Rural Low-Income Families: Tracking Their Well-Being and Functioning in the Context of Welfare Reform	Imig, D.
MICL01911	Moving and Aging-In-Place in the Retirement Planning of the Maturing Population	Schiemberg, L.
MICL01991*	How Do Structured Out-Of-School Experiences Contribute to Positive Youth Development	Keith, J.

# Fisheries & Wildlife

Phone: 355-4478



William W. Taylor, Chair

## FACULTY

	RANK	MAES	MSUE	JOINT	INTEREST
Bence, James R. <sup>6</sup>	13	0.75	0.20	0.05	Fish Population Dynamics/Fish Ecology
Bremigan, Mary T. <sup>6</sup>	13	0.60	0.00	0.40	Fish Management
Campa, Henry III	12	0.50	0.00	0.50	Wildlife Habitat Ecology
Garling, Donald L.	12	0.30	0.50	0.20	Aquaculture
Hayes, Daniel B. <sup>6</sup>	13	0.75	0.20	0.05	Stream Fisheries Biology
Jones, Michael L. <sup>6</sup>	12	0.75	0.20	0.05	Fisheries Stream Models
Li, Weiming <sup>6</sup>	13	0.75	0.20	0.05	Fish Physiology
Liu, Jianguo	12	0.50	0.00	0.50	Wildlife Systems Models
Lupi, Frank <sup>6</sup>	13	0.10	0.28	0.62	Natural Resource Economics
Maurer, Brian A. <sup>6</sup>	13	0.50	0.20	0.30	Landscape Ecology
Millenbah, Kelly F.	14	0.37	0.00	0.63	Restoration Ecology
Peacor, Scott D.	14	0.25	0.00	0.75	Aquatic Ecological/Ecosystem Modeler
Peyton, R. Benny <sup>6</sup>	12	0.65	0.17	0.18	Human Dimensions
Prince, Harold H.	12	0.55	0.00	0.45	Waterfowl/Wetlands
Riley, Shawn J.	14	0.30	0.28	0.42	Wildlife Ecologist
Scribner, Kim T. <sup>6</sup>	13	0.75	0.20	0.05	Molecular Ecology
Soranno, Patricia A.	13	0.50	0.00	0.50	Limnology
Winterstein, Scott R.	12	0.50	0.00	0.50	Wildlife Biometry
<b>TOTALS:</b>		<b>9.37</b>	<b>2.43</b>	<b>6.20</b>	

## PROJECTS

MICL01540	Ecology, Population Dynamics and Management of Michigan Great Lakes Fisheries Resources	Taylor, W.
MICL01646	Wildlife Responses to Habitat Management	Campa, H.
MICL01740	Development of Commercial Fish Culture Techniques	Garling, D.
MICL01758	Relationship Between Habitat Characteristics and Fish Population Dynamics	Hayes, D.
MICL01759	Tools and Information for Improved Management of Great Lakes' Fisheries	Bence, J.
MICL01785	A Spatially Explicit Approach to Modeling Wildlife Habitats and Populations Across Heterogeneous Landscapes	Liu, J.
MICL01868	The Influence of Landscapes on Freshwater Ecosystems	Soranno, P.
MICL01893	Uncertainty and the Management of Great Lakes Fisheries	Jones, M.
MICL01894	Intraspecific Chemical Communication of Fish	Li, W.
MICL01904	Developing Landscape-Based Classification Systems for Lake Management	Bremigan, M.
MICL01976	Understanding Spatial Patterns of Wildlife Habitat Use in Human-Modified Ecosystems at Different Scales	Maurer, B.
MICL01977	Effects of Watershed Forest Cover on Stream Habitat Conditions and Population Dynamics of Juvenile Steelhead ( <i>Onchorynchus mykiss</i> )	Hayes, D.
MICL02030	Modeling Great Lakes Food Webs to Understand Broad Effects of Disturbances	Peacor, S.
MICL02031	Adaptive Impact Management: Improving Decision-Making Capacity of Stakeholders in Fish and Wildlife Management	Riley, S.
MICL02044*	Landscape Ecology of White-Tailed Deer in Agro-Forest Ecosystems: A Cooperative Approach to Support Management	Campa, H.
MICL03378	Wildlife Response to Ecological Restoration	Millenbah, K.
MICL03380	Modeling Wildlife Population Dynamics	Winterstein, S.
MICL03382	Composition of Waterfowl Harvest and Avian Use of Wetland Habitats in Michigan	Prince, H.
MICL03383	Genetic Diversity of Native and Introduced Fisheries in the Great Lakes	Scribner, K.

# Fisheries & Wildlife (continued)

## PROJECTS

MICL03386	Human Dimensions of Managing Natural Resource Issues: Cultural Carrying Capacity of Deer in Michigan	Peyton, R.
MICL08256	Information Exchange, Citizen Water Monitoring and Agricultural Best Management Practices	Habron, G.
MICL08292	Integrating Ecology and Economics for Managed Forest Landscapes	Liu, J.
MICL10010	Regional Aquaculture Center	Batterson, T.
MICL10011	Regional Aquaculture Center	Batterson, T.
MICL10012	Regional Aquaculture Center	Batterson, T.
MICL10013	Regional Aquaculture Center	Batterson, T.
MICL10014	Support for a National Coordinator for New Animal Drug Applications	Batterson, T.
MICL10015	Regional Aquaculture Center — North Central Region	Batterson, T.



Photo by Robin Millsap

## Food Science & Human Nutrition

Phone: 355-8474



**Mark A. Uebersax,**  
Chair

## FACULTY

	RANK	MAES	MSUE	JOINT	INTEREST
Bennink, Maurice R.	12	0.50	0.00	0.50	Nutritional Biochemistry
Booren, Alden M.	12	0.15	0.75	0.10	Meat/Poultry/Fish
Bourquin, Leslie D.	13	0.25	0.75	0.00	Food Safety
Claycombe, Kate	14	0.50	0.00	0.50	Nutritional Biochemistry
Dolan, Kirk D.	14	0.25	0.50	0.25	Plant & Food Engineering
Doumit, Matthew E.	13	0.25	0.00	0.75	Meat Quality
Fraker, Pamela J.	12	0.20	0.00	0.80	Cellular Immunology
Gangur, Venugopal	14	0.25	0.00	0.75	Food Allergy
Hamm, Michael W. <sup>2</sup>	12	0.10	0.10	0.80	Sustainable Agriculture
Hoerr, Sharon M.	12	0.40	0.00	0.60	Community Nutrition
Hord, Norman G.	14	0.35	0.00	0.65	Nutritional Epidemiology
Linz, John E.	12	0.50	0.00	0.50	Food Microbiology
Ng, Perry K. W.	13	0.50	0.00	0.50	Cereal Science
Ofoli, Robert Y.	13	0.49	0.00	0.51	Colloid/Interface Science
Olson, Beth	14	0.24	0.76	0.00	Community Nutrition
Osburn, Wesley N.	13	0.15	0.00	0.85	Meat/Poultry Production
Pestka, James J.	12	0.62	0.00	0.38	Food Microbiology/Immunology

# Food Science & Human Nutrition (continued)

## FACULTY

Romsos, Dale R.	12	0.50	0.00	0.50	Lipid Metabolism
Ryser, Elliott T.	14	0.53	0.00	0.47	Dairy Foods/Microbiology
Steffe, James F.	12	0.25	0.00	0.75	Food Engineering/Rheology
Strasburg, Gale M.	12	0.65	0.00	0.35	Muscle Biochemistry
Ustunol, Zeynep	13	0.72	0.00	0.28	Dairy Foods
Whittam, Thomas S. <sup>3</sup>	12	0.08	0.00	0.92	Nutritional Genomics
Zile, Maija H.	12	0.50	0.00	0.50	Nutritional Biochemistry
<b>TOTALS:</b>		<b>8.93</b>	<b>2.86</b>	<b>12.21</b>	

## PROJECTS

MICL01413	Metabolism and Function of Vitamin A	Zile, M.
MICL01448	Microbial Foodborne Disease	Pestka, J.
MICL01478*	Genetic Improvement of Beans ( <i>Phaseolus vulgaris</i> L.) For Yield, Disease Resistance and Food Value	Uebersax, M.
MICL01599	Improving Quality and Safety of Muscle Food Products	Strasburg, G.
MICL01623	Comparative Aspects of Nutrition and Lipid Metabolism	Romsos, D.
MICL01664	Enhancing the Value of Dairy and Dairy-Based Products	Ustunol, Z.
MICL01665	Nutritional Assessment in Population-Based Epidemiological Studies	Song, W.
MICL01699	Molecular Structure of Soft Wheat Proteins in Relation to End-Use Quality	Ng, P.
MICL01706	Interactions of Biological Macromolecules at the Liquid-Liquid Interface	Ofoli, R.
MICL01762	Relationship of Diet and Cancer	Bennink, M.
MICL01791	Processing and Quality Evaluation of Fruits and Vegetables	Cash, J.
MICL01804*	Using Stage Based Interventions to Increase Fruit and Vegetable Intake in Young Adults	Hoerr, S.
MICL01856	Aflatoxin B1 Biosynthesis in <i>Aspergillus</i>	Linz, J.
MICL01878	Relation of Family Meals and Lifestyle Factors to Obesity and Diet Quality of Children and Youth	Hoerr, S.
MICL01895	Influence of Diet and Phytochemicals on Colon Carcinogenesis	Bourquin, L.
MICL01920*	Management of Grain Quality and Security for World Markets	Ng, P.
MICL01932	Microbial Safety of Foods	Ryser, E.
MICL01937	Processing Treatments Influencing Functional Properties and Utilization of Muscle Foods	Booren, A.
MICL01945*	The Poultry Food System: A Farm to Table Model	Booren, A.
MICL01948	Plant-Derived Dietary Components and Chronic Disease Risk	Hord, N.
MICL01964*	Enhancing Food Safety Through Control of Food-Borne Disease Agents	Ryser, E.
MICL01981	Enhancing Economic and Nutritional Value of Plant Products Through Food Processing Technology	Dolan, K.
MICL02019	Evolution of Acid Resistance in Pathogenic <i>E. coli</i>	Whittam, T.
MICL02023	Assessment of Allergenic Potential of Food	Gangur, V.
MICL02036*	N-3 Polyunsaturated Fatty Acids and Human Health and Disease	Claycombe, K.
MICL02042*	Nutrient Bioavailability-Phytonutrients and Beyond	Bennink, M.
MICL02053*	Beneficial and Adverse Effects of Natural Bioactive Dietary Chemicals on Human Health and Food Safety	Pestka, J.
MICL02064*	Parent and Household Influences on Calcium Intake Among Preadolescents	Olson, B.
MICL02065	Obesity-Induced Systemic Inflammation: Effects of Anti-Inflammatory Nutrients	Claycombe, K.
MICL03363	Institute for Food Laws and Regulations	Hegarty, P.
MICL08239	Function of Vitamin A in Quail Embryogenesis	Zile, M.
MICL08269	Genetic Defect in Pale, Soft, Exudative Turkey Meat	Strasburg, G.
MICL08275	Apple Juice and HACCP: Hazard Surveillance, Training, and Perceptions	Bourquin, L.

# Forestry

Phone: 355-0091



Daniel E. Keathley, Chair

## FACULTY

	RANK	MAES	MSUE	JOINT	INTEREST
Dickmann, Donald I.	12	0.55	0.00	0.45	Fire Ecology, Silviculture
Epperson, Bryan K.	12	0.70	0.00	0.30	Forest Genetics
Friedman, Steven K.	14	0.35	0.00	0.65	Forest Resource Management/GIS
Han, Kyung-Hwan	14	0.70	0.00	0.30	Genomics
Hart, James B., Jr.	13	0.50	0.00	0.50	Forest Soils
Kamdern, Donatien-Pascal	12	0.70	0.00	0.30	Wood Science
Kielbaso, Julian J.	12	0.15	0.25	0.60	Urban Forestry
Kobe, Richard K.	13	0.70	0.00	0.30	Forest Ecology
Leefers, Larry A.	13	0.50	0.00	0.50	Forest Economics
MacFarlane, David	14	0.60	0.00	0.40	Forest Measurements/Modeling
Matuana, Laurent M.	14	0.60	0.00	0.40	Wood Composites
McDonough, Maureen H.	12	0.15	0.50	0.35	Forest Sociology
Potter-Witter, Karen L.	13	0.20	0.65	0.15	Forest Economics
Rothstein, David E.	14	0.60	0.00	0.40	Forest Nutrient Dynamics
Walters, Michael B. <sup>6</sup>	14	0.75	0.20	0.05	Forest Ecology
Yin, Runsheng	14	0.70	0.00	0.30	Forest Economics
<b>TOTALS:</b>		<b>8.45</b>	<b>1.60</b>	<b>5.95</b>	

## PROJECTS

MICL02027	Market Impacts and Policy Implications of U.S. Trade Restrictions on Imported Softwood Lumber	Yin, R.
MICL02061	Molecular Biology of Wood Formation	Han, K.
MICL02072	Microcellular Foaming of Wood-Plastic Composite Lumber	Matuana, L.
MICL02073	Modeling Forest Growth and Productivity as a Function of Temporal-Spatial Variability in Environmental Resource Distribution	MacFarlane, D.
MICL02074	Geospatial and Multi-Scale Investigations of Landscape-Scale Effects of Forest Management	Friedman, S.
MICL07650	Advanced Technology Applications to Eastern Hardwood Utilization	Kamdern, D.
MICL07668	Advanced Technology Applications to Eastern Hardwood Utilization	Kamdern, D.
MICL07675	Advanced Technology Applications to Eastern Hardwood Utilization	Kamdern, D.
MICL08295	Seed, Substrate and Resource Limits to Tree Regeneration in Red Pine Plantations	Walters, M.
MICL08300	A New Method for Improving Moisture Resistance and Toughness of Urea-Formaldehyde Adhesive	Matuana, L.

# Geography

Phone: 355-4649



Richard E. Groop, Chair

## FACULTY

	RANK	MAES	MSUE	JOINT	INTEREST
Friedman, Steven K.	14	0.25	0.00	0.75	Forest Resource Management
Skole, David L.	12	0.18	0.00	0.82	Land Use & Land Cover Change
<b>TOTALS:</b>		<b>0.43</b>	<b>0.00</b>	<b>1.57</b>	

## PROJECTS

MICL01983	Land Use and Cover Change Dynamics Using Geospatial Information	Skole, D.
MICL03373	Impacts of Weather and Climate on Michigan Agriculture	Andresen, J.

# Horticulture

Phone: 355-5191



Ronald L. Perry, Chair

## FACULTY

	RANK	MAES	MSUE	JOINT	INTEREST
Beaudry, Randolph M.	12	0.50	0.50	0.00	Postharvest Physiology
Behe, Bridget K.	12	0.40	0.00	0.60	Horticulture Marketing
Biernbaum, John A.	12	0.30	0.00	0.70	Plant Physiology/Sustainable Horticulture/Organics
Cameron, Arthur C.	12	0.70	0.00	0.30	Plant Physiology/Landscape Horticulture
Cregg, Bert M.	14	0.50	0.50	0.00	Plant Physiology/Woody Ornamentals
Dilley, David R.	12	0.80	0.00	0.20	Postharvest Physiology/Pomology
Fernandez, Rodney	13	0.25	0.50	0.25	Integrated Crop Management for Nurseries
Flore, James A.	12	0.65	0.00	0.35	Plant Physiology/Pomology
Grumet, Rebecca	12	0.84	0.00	0.16	Vegetable Breeding/Genetics
Hancock, James F.	12	0.84	0.00	0.16	Small Fruit Breeding/Genetics
Hanson, Eric J.	12	0.35	0.42	0.23	Pomology Small Fruits
Heins, Royal D.	12	0.75	0.00	0.25	Plant Physiology/Floriculture
Howell, Gordon S.	12	0.80	0.00	0.20	Plant Physiology/Viticulture/Enology
Iezzoni, Amy F.	12	0.80	0.00	0.20	Fruit Breeding/Genetics
Lang, Gregory A.	12	0.75	0.25	0.00	Pomology/Growth & Development
Lang, Nancy Suzanne	13	0.70	0.00	0.30	Plant Physiology/Integrated Crop Management/Turfgrass
Loescher, Wayne H.	12	0.75	0.00	0.25	Plant Physiology
Lownds, Norman K.	13	0.25	0.00	0.75	Landscape Horticulture/Stress Physiology
Nair, Muraleedharan G.	12	0.90	0.00	0.10	Natural Products/Chemistry
Ngouajio, Mathieu	14	0.40	0.50	0.10	Vegetable Crops
Poff, Ken	12	0.25	0.00	0.75	Plant Physiology
Rowe, D. Bradley	13	0.25	0.00	0.75	Landscape Horticulture
Runkle, Eric S.	14	0.50	0.50	0.00	Floriculture
Schemske, Douglas W. <sup>3</sup>	12	0.10	0.00	0.90	Plant Adaptation & Evolution of Pollinations Systems
Schutzki, Robert E.	13	0.10	0.00	0.90	Landscape Horticulture
Sink, Kenneth C.	12	0.75	0.00	0.25	Genetics/Plant Breeding
Snapp, Sieglinde S.	14	0.25	0.25	0.50	Vegetable/Integrated Crop Management

**FACULTY**

van Nocker, Steven R.	14	0.75	0.00	0.25	Reproductive Development/Genetics
Zabadal, Thomas J.	13	0.25	0.75	0.00	Viticulture
Zandstra, Bernard H.	12	0.25	0.75	0.00	Vegetable Crops
<b>TOTALS:</b>		<b>15.68</b>	<b>4.92</b>	<b>9.40</b>	

**PROJECTS**

MICL01155*	Postharvest Physiology of Fruits	Beaudry, R.
MICL01222*	Conservation, Management, Enhancement and Utilization of Plant Genetic Resources	Iezzoni, A.
MICL01272	Physiology of Carbon Balance in Fruit Crops: Abiotic and Biotic Thresholds	Flore, J.
MICL01305*	Rootstock and Interstem Effects on Pome- and Stone-Fruit Trees	Perry, R.
MICL01325	Weed Control in Vegetable Crop Management Systems	Zandstra, B.
MICL01428	Sour Cherry and Peach Breeding and Genetics	Iezzoni, A.
MICL01607	Physiological Adaptation and Cultural Manipulation of Plant Systems	Schutzki, R.
MICL01680	Value-Added Products for Improving Human, Animal and Plant Health.	Nair, M.
MICL01731	Genetic and Biotechnology Studies for Selected Horticultural Crops	Sink, K.
MICL01753	Application of Molecular Genetic Approaches to Vegetable Crop Improvement	Grumet, R.
MICL01810	Genetic Improvement of Strawberries and Blueberries	Hancock, J.
MICL01839	Efficient Use of Fertilizers in Fruit Production	Hanson, E.
MICL01848	Enhancement of Control Over Quality Loss in Horticultural Commodities Following Harvest	Beaudry, R.
MICL01901	Marketability and Performance of Selected Horticultural Products and Services	Behe, B.
MICL01908	Utilization of Chlorophyll Fluorescence in Propagation by Stem Cuttings	Rowe, D.
MICL01927*	Freeze Damage and Protection of Horticultural Species	Howell, G.
MICL01933	Greenhouse Organic Crop Production for Small Farms	Biernbaum, J.
MICL01941	Repellents for Animals Derived from Plant Species.	Ries, S.
MICL01955*	Technical and Economical Efficiencies of Producing, Marketing, and Managing Environmental Plants	Behe, B.
MICL01956*	Postharvest Quality and Safety in Fresh-Cut Vegetables and Fruits	Beaudry, R.
MICL01978	Water and Nutrient Management in Nursery and Landscape Systems.	Cregg, B.
MICL01980	Integrated Crop Management to Improve Resource Efficiency and Resilience of Vegetable Systems	Snapp, S.
MICL01998	Site-Specific Management Using Remote Sensing for Detection of Abiotic/Biotic Stress in Horticultural Crops	Lang, N.
MICL02002	Integrated Tree Fruit Physiology, Genetics, and Management	Lang, G.
MICL02003	Polyol Metabolism, Compartmentation, and Transport	Loescher, W.
MICL02010	Phytoremediation of Agricultural Chemicals Using Ornamental Plants	Fernandez, R.
MICL02011	Improving Vegetable Production and Ecology Under Short Crop Rotation	Ngouajio, M.
MICL02021	Environmental and Cultural Strategies to Control Growth and Development of Floriculture Crops	Runkle, E.
MICL02057	New Floriculture Crops: Selection and Development of Production Protocols	Cameron, A.
MICL03218	Achieving Sustainable Grapevine Yields, Maximum Processed Quality, Resistance to Environmental Stress	Howell, G.
MICL03305	Vineyard Mechanization in Michigan Vineyards	Zabadal, T.
MICL03375	Plant Science Education Outreach Through the MSU Horticultural Gardens	Lownds, N.
MICL03388	Molecular Biology of Plant Development Relating to the Needs of Michigan Horticulture	van Nocker, S.
MICL03406	Peach Germplasm Improvement	Shane, W.
MICL08250	Cultural and Biological Alternatives to Methyl Bromide Fumigation of Strawberries	Hancock, J.
MICL08288	Cultural and Biological Alternatives to Methyl Bromide Fumigation of Strawberries	Hancock, J.
MICL08301	Characterization of Arabidopsis Flowering Regulators VIP3 and VIP4	van Nocker, S.

## Human Environment & Design

Phone: 355-7712



Photo by Robin Millsap



Sally I. Helvenston, Chair

### FACULTY

	RANK	MAES	MSUE	JOINT	INTEREST
Pysarchik, Dawn I.	13	0.31	0.00	0.69	Merchandising Management
Slocum, Ann C.	13	0.25	0.00	0.75	Apparel Design & Textiles
Sontag, M. Suzanne	12	0.25	0.00	0.75	Apparel Design & Textiles
Sternquist, Brenda J.	12	0.25	0.00	0.75	Merchandising Management
<b>TOTALS:</b>		<b>1.06</b>	<b>0.00</b>	<b>2.94</b>	

### PROJECTS

MICL01442*	Mediating Exposure to Environmental Hazards Through Textile Systems	Slocum, A.
MICL01775	Processed Food Industries in India: Market Evolution	Pysarchik, D.
MICL01833	Food Retailer's Buyer-Supplier Relationships in Emerging Markets	Sternquist, B.
MICL02024	Ecological Theory Construction in Clothing and the Self	Sontag, M.

## Julian Samora Research Institute

Phone: 432-1317

### PROJECTS

MICL08210	Latinos in the Rural Midwest: Community Development Implications	Millard, A.
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## Kellogg Biological Station

Phone: 269-671-2341

### PROJECTS

MICL08276	Genetic Mechanisms of Adaptation and Integration Among Floral Traits in a Weed	Conner, J.
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# Large Animal Clinical Sciences

Phone: 355-9593



Thomas H. Herdt, Chair

## FACULTY

	RANK	MAES	MSUE	JOINT	INTEREST
Erskine, Ronald J.	12	0.25	0.33	0.42	Dairy Cattle Mastitis
Grooms, Daniel L.	13	0.50	0.50	0.00	Beef Disease Management
Kaneene, John B.	12	0.27	0.00	0.73	Epidemiology/Disease Impact
Kirkwood, Roy N.	13	0.37	0.00	0.63	Swine Reproduction
Mansfield, Linda S.	13	0.23	0.00	0.77	Food Safety/Campylobacter Pathogenesis
Robinson, Norman E.	12	0.25	0.00	0.75	Respiratory Physiology
Rook, Joseph S.	12	0.20	0.60	0.20	Small Ruminant Animals
Sears, Phillip M.	12	0.35	0.35	0.30	Dairy Disease Management
Straw, Barbara E.	12	0.28	0.50	0.22	Swine Veterinary Medicine
<b>TOTALS:</b>		<b>2.70</b>	<b>2.28</b>	<b>4.02</b>	

## PROJECTS

MICL01417*	Evolving Pathogens, Targeted Sequences, and Strategies for Control of Bovine Respiratory Disease	Grooms, D.
MICL01708	Reducing Economic Losses and Food Safety Risks Related to Mastitis	Erskine, R.
MICL01801	Hemorrhagic Bowel Syndrome and Antimicrobial Resistance in Swine	Straw, B.
MICL01819	Nutritional Assessment of Animals and Animal Populations by Laboratory Means	Herdt, T.
MICL01916	Diagnosis and Prevention of Bovine Viral Diarrhea Virus (BVDV)	Grooms, D.
MICL01917	Bovine Respiratory Disease: Risk Factors, Immunology, Pathogenesis and Control	Baker, J.
MICL02016	Preharvest Food Safety: Reducing the Risk of Preharvest Pathogens, Antibiotic Residues and Antibiotic Resistance in Cows	Sears, P.
MICL02017	Improving the Reproductive Performance of Swine Herds	Kirkwood, R.
MICL02025	Elimination of <i>Campylobacter jejuni</i> From the Food Chain	Mansfield, L.
MICL02040*	Mastitis Resistance to Enhance Dairy Food Safety	Erskine, R.
MICL03355	Perinatal Lamb Mortality and Production Issues Associated with Pasture Lambing Systems in Michigan	Rook, J.
MICL06899	Pathogenesis of Acute Infection with Bovine Viral Diarrhea Virus	Grooms, D.
MICL06906	Natural Transformation Between Genetically Marked <i>Campylobacter jejuni</i> Strains in the Pig Intestine	Mansfield, L.
MICL06907	Development of a Biosensor for Rapid Detection of Viruses	Grooms, D.
MICL06910	Equine Chronic Airway Disease	Robinson, N.
MICL08246	Antibiotic Usage and Risk Factors for Antimicrobial Resistance in Pork Production	Norby, B.
MICL08273	Antimicrobial Resistance in Swine Given 5 In-Feed Antibiotic Regimens	Straw, B.
MICL08286	Mucus Secretion and Clearability in Equine COPD (RAO)	Robinson, N.
MICL08294	Interventions for Controlling Antimicrobial Resistance of <i>Salmonella</i> and <i>Campylobacter</i> in Dairy Cattle	Kaneene, J.

# Microbiology & Molecular Genetics

Phone: 355-6463



Walter J. Esselman, Chair

## FACULTY

	RANK	MAES	MSUE	JOINT	INTEREST
Bagdasarian, Michael	12	0.39	0.00	0.61	Molecular Biology
Breznak, John A.	12	0.30	0.00	0.70	Microbial Ecology
Champness, Wendy C.	12	0.50	0.00	0.50	Microbial Genetics
Dazzo, Frank B.	12	0.80	0.00	0.20	Microbial Ecology
Dodgson, Jerry	12	0.36	0.00	0.64	Molecular Genetics
Hausinger, Robert P.	12	0.40	0.00	0.60	Microbial Physiology
Klug, Michael J.	12	0.25	0.00	0.75	Microbial Ecology
Maes, Roger K.	12	0.03	0.00	0.97	Virology
Reddy, C. Adinarayana	12	0.46	0.00	0.54	Microbial Physiology/Ecology
Schmidt, Thomas M.	12	0.40	0.00	0.60	Microbial Ecology
Thomashow, Michael F.	12	0.14	0.00	0.86	Plant & Microbial Molecular Genetics
Tiedje, James M.	12	0.15	0.00	0.85	Soil Microbiology
Whittam, Thomas S. <sup>3</sup>	12	0.17	0.00	0.83	Nutritional Genomics
<b>TOTALS:</b>		<b>4.35</b>	<b>0.00</b>	<b>8.65</b>	

## PROJECTS

MICL01314	The Beneficial <i>Rhizobium</i> -Rice Association	Dazzo, F.
MICL01557	Molecular Genetic Regulation of Streptomyces Antibiotics	Champness, W.
MICL01593*	Advanced Technologies for the Genetic Improvement of Poultry	Dodgson, J.
MICL01629	Molecular Biology and Enzymology of Lignin Degradation by Basidiomycete Fungi	Reddy, C.
MICL01728*	National Animal Genome Research Project	Dodgson, J.
MICL01757	Understanding the Distribution of Microbial Populations in Soils	Schmidt, T.
MICL01857	Physiology and Phylogenetic Diversity of Termite Gut Symbionts	Breznak, J.
MICL01918	Enzymology of Alpha-Ketoglutarate-Dependent Dioxygenases	Hausinger, R.
MICL02020	Pathogenicity Factors of <i>Vibrio</i> and <i>E. coli</i> O157: Secretion of Toxins and Dissemination of Genes	Bagdasarian, M.
MICL02039*	Enteric Diseases of Swine and Cattle: Prevention, Control and Food Safety	Maes, R.
MICL02068*	Advanced Technologies for the Genetic Improvement of Poultry	Dodgson, J.
MICL06902	Requirement for Branched-Chain Amino Acid Biosynthesis in <i>Actinobacillus pleuropneumoniae</i> Disease	Mulks, M.
MICL06903	T-Cell Epitope Mapping in Bovine Viral Diarrhea Virus Proteins	Bagdasarian, M.
MICL06904	The Role of Bovine Enteric Calicivirus (BECV) in Calf Diarrhea	Maes, R.
MICL08243	Towards an Understanding of the Untapped Microbial Diversity in Soils	Schmidt, T.
MICL08252	Characterization of Allantoinase	Hausinger, R.
MICL08265	Bridging Genome Sequence to the Prevention of Marek's Disease in Poultry	Dodgson, J.
MICL08281	<i>In vivo</i> Expressed Genes of <i>Actinobacillus pleuropneumoniae</i>	Mulks, M.

# National Food Safety & Toxicology Center

Phone: 432-3100



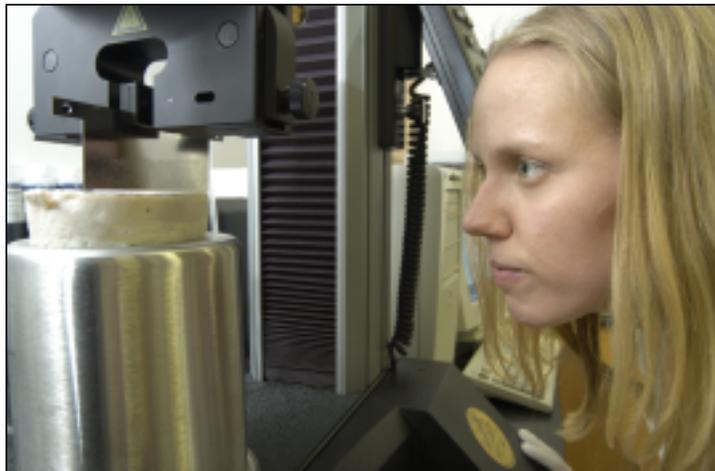
Ewen C. D. Todd, Director

## FACULTY

	RANK	MAES	MSUE	JOINT	INTEREST
Giesy, John P.	12	0.25	0.00	0.75	Aquatic Toxicology
<b>TOTALS:</b>		<b>0.25</b>	<b>0.00</b>	<b>0.75</b>	

## PROJECTS

MICL01919	Fates and Effects of Potential Endocrine Modulating Compounds in the Environment	Giesy, J.
MICL01995	A Toxicogenomic Approach to Understanding Environmental Pollutants	La Pres, J.
MICL03364	Improved Microbial Food Safety Through Risk Assessment, Management, Communication, and Analysis	Mather, E.
MICL07670	NC Region IR-4 Leader Lab Program to Clear Pest Control Agents for Minor Uses (Support for Reassignment of ARS-OH Field Studies)	Hollingworth, R.
MICL07680	NC Region IR-4 Leader Lab Program to Clear Pest Control Agents for Minor Uses	Hollingworth, R.
MICL08228	Anti-Oxidant, Anti-Inflammatory and Anti-Cancer Compounds from Tart Cherries	Nair, M.
MICL08287	Risks for Organic Food — Real or Perceived?	Todd, E.



## Packaging (School of)

Phone: 355-9580



Bruce R. Harte, Director

## FACULTY

	RANK	MAES	MSUE	JOINT	INTEREST
Bix, Laura	14	0.25	0.00	0.75	Medical Packaging
Clarke, Robert H.	14	0.50	0.00	0.50	Manufacturing Operations
Downes, Theron W.	12	0.20	0.00	0.80	Packaged Food Quality
Mohanty, Amar K.	13	0.60	0.00	0.40	Materials Science
Singh, Sher Paul	12	0.20	0.00	0.80	Distribution/Transportation/Environmental Measuring/Packaging Dynamics
<b>TOTALS:</b>		<b>1.75</b>	<b>0.00</b>	<b>3.25</b>	

## PROJECTS

MICL01735	New Reusable Containers for the Fresh Produce and Meat Packaging	Singh, S.
MICL01736	Quality Retention in Packaged Food	Downes, T.
MICL01921	Automatic Data Capture for Packaging Line Forces That Impact Operations	Clarke, R.
MICL02069	Improving the Healthcare System Through the Use of Packaging	Bix, L.

## Park, Recreation & Tourism Resources

Phone: 353-5190



Joseph D. Fridgen, Chair

### FACULTY

	RANK	MAES	MSUE	JOINT	INTEREST
Holecek, Donald F.	12	0.75	0.25	0.00	Resource Economics/Tourism
Nelson, Charles M.	13	0.25	0.00	0.75	Natural Resource Management
Propst, Dennis B.	13	0.50	0.00	0.50	Psychology/Policy/Economics
Stynes, Daniel J.	12	0.50	0.00	0.50	Quantitative Methods/Economic Impacts
Vander Stoep, Gail A.	13	0.25	0.25	0.50	Communications/Human Dimensions
Vogt, Christine A.	14	0.50	0.00	0.50	Tourism/Marketing/Communications
<b>TOTALS:</b>		<b>2.75</b>	<b>0.50</b>	<b>2.75</b>	

### PROJECTS

MICL01763	Influences of Natural Resource Recreation on Land Management	Nelson, C.
MICL01903	Extent and Role of Participation and Choice in Outdoor Recreation Planning and Management	Propst, D.
MICL01994	Integrating Interpretation, Heritage and Community with Tourism Development and Resource Management: Maritime/Coastal Focus	Vander Stoep, G.
MICL02048	Recreation and Tourism: Demand and Economic Impacts	Stynes, D.
MICL02062	Consumer Decision Making Behavior in Selected Tourism and Recreation Contexts	Vogt, C.
MICL03280	Travel, Tourism and Recreation Resource Center	Holecek, D.

## Pathobiology & Diagnostic Investigation

Phone: 432-4680



Willie M. Reed, Chair

### FACULTY

	RANK	MAES	MSUE	JOINT	INTEREST
Bolin, Carole A.	12	0.22	0.00	0.78	Infectious Diseases of Livestock & Companion Animals
Bolin, Steven R.	12	0.22	0.00	0.78	Infectious Diseases of Livestock & Companion Animals
Harkema, Jack	12	0.31	0.00	0.69	Toxicology
Meek, Katheryn	13	0.25	0.00	0.75	Molecular Immunology
Patterson, Jon S.	13	0.25	0.00	0.75	Veterinary Pathology/Infectious Disease/Animals
Williams, Kurt	14	0.30	0.00	0.70	Comparative Pulmonary Pathology & Lung Injury & Repair
<b>TOTALS:</b>		<b>1.55</b>	<b>0.00</b>	<b>4.45</b>	

# Pathobiology & Diagnostic Investigation (continued)

**PROJECTS**

MICL01720	Immunohistochemical Diagnosis of Infectious Diseases	Patterson, J.
MICL01776	Endotoxin/Ozone Co-Exposures and Airway Epithelial Remodeling	Harkema, J.
MICL01958*	Avian Respiratory Diseases: Pathogenesis, Surveillance, Diagnosis and Control	Reed, W.
MICL01999	Diagnosis and Epizootiology of Emerging Infectious Diseases of Livestock and Poultry	Bolin, S.
MICL02012	Mechanisms of Protective Immunity in Bovine Leptospirosis	Bolin, C.
MICL06905	Characterization of a New Disease and a Novel Calicivirus Detected in Michigan Rabbits	Bolin, S.
MICL06908	Equine Cushing's Disease: Changes in Immune System Function and in Epidermal Laminae with Laminitis	Bowker, R.

## Physiology

Phone: 355-6475



William S. Spielman, Chair

**FACULTY**

	RANK	MAES	MSUE	JOINT	INTEREST
Jump, Donald B.	12	0.50	0.00	0.50	Molecular Endocrinology
<b>TOTALS:</b>		<b>0.50</b>	<b>0.00</b>	<b>0.50</b>	

**PROJECTS**

MICL01892	Dietary Fat Regulation of Hepatic Gene Expression	Jump, D.
MICL08302	The Role of Hepatic Metabolism in the Control of Transcription Factor Function	Jump, D.

## Plant Biology

Phone: 355-4683



Richard E. Triemer, Chair

**FACULTY**

	RANK	MAES	MSUE	JOINT	INTEREST
Adams, Gerard C.	13	0.20	0.00	0.80	Mycology/Plant Pathology
Allison, Richard F.	13	0.55	0.00	0.45	Plant Molecular Virology
Jarosz, Andrew M.	13	0.45	0.00	0.55	Plant Pathology/Pathogen Epidemiology
Malmström, Carolyn	14	0.25	0.00	0.75	Ecosystem Dynamics/Ecological Role of Plant Pathogens
Ohlrogge, John B.	12	0.84	0.00	0.16	Plant Physiology/Biochemistry/Molecular Biology/Plant Lipid Synthesis
Osteryoung, Katherine W.	13	0.25	0.00	0.75	Biochemistry/Molecular Biology/Cell Biology
Prather, L. Alan	13	0.25	0.00	0.75	Plant Systematics
Sang, Tao	13	0.25	0.00	0.75	Genetics of Adaptation
Sears, Barbara B.	12	0.25	0.00	0.75	Molecular Biology & Genetics of Plant Organelles
<b>TOTALS:</b>		<b>3.29</b>	<b>0.00</b>	<b>5.71</b>	

**PROJECTS**

MICL01533	Genetic Engineering of Oilseed Crops	Ohlrogge, J.
MICL01679	Chloroplast Microsatellite Mutators	Sears, B.
MICL01808	Viral Transgene Recombination in Gene Silenced Virus Resistant Transgenic Plants	Allison, R.
MICL01896	Phylogeny of the Rice Genus, <i>Oryza</i> , and Evolution of Rice Disease Resistance Genes	Sang, T.

## Plant Biology (continued)

### PROJECTS

MICL01910	Molecular Biology of Plant-Bacterial Interactions	He, S.
MICL01912	Pathogen Population Biology as a Tool in Developing Disease Control Strategies	Jarosz, A.
MICL01922	Plant Evolution and Conservation: The Role of Flower Form and Function	Prather, L.
MICL01938	The Relationship Between Phototropism and the Positioning of Leaves and Flowers	Poff, K.
MICL01988	Analysis of Chloroplast Division in Plants	Osteryoung, K.
MICL02029	Ecological Genetics of Adaptation in <i>Lobelia cardinalis</i>	Schemske, D.
MICL02055	The Effects of the Barley and Cereal Yellow Dwarf Viruses on the Dynamics of Natural Grasslands	Malmstrom, C.
MICL08212	Production of Industrially Useful Monoenoic Fatty Acids in Transgenic Plants	Ohlrogge, J.
MICL08240	Homologous Recombination in Plant Mitochondria	Sears, B.
MICL08282	Viral Transgene Recombination in Gene Silenced Virus Resistant Transgenic Plants	Allison, R.
MICL08283	Tradeoffs Between Mechanical Strength, Xylem Safety, and Conductive Efficiency	Telewski, F.
MICL08318	Characterizing Plant Coenzyme a Biosynthesis	Tilton, G.

## Plant Pathology

Phone: 353-8645



Raymond Hammerschmidt,  
Chair

### FACULTY

	RANK	MAES	MSUE	JOINT	INTEREST
Adams, Gerard C.	13	0.35	0.27	0.38	Mycology/Plant Pathology
Allison, Richard F.	13	0.20	0.00	0.80	Plant Molecular Virology
Fulbright, Dennis W.	12	0.83	0.00	0.17	Plant Pathology/Plant Pathogen Genetics/Christmas, Oak, & Nut Tree Diseases
Hart, L. Patrick	12	0.40	0.50	0.10	Plant Pathology/Field Crops
Hausbeck, Mary K.	12	0.40	0.60	0.00	Plant Pathology/Ornamentals, Vegetables & Greenhouse Crops
Jarosz, Andrew M.	13	0.30	0.00	0.70	Plant Pathology/Pathogen Epidemiology
Kirk, William W.	14	0.45	0.45	0.10	Plant Pathology/Vegetables/Potatoes/Perennial Herbaceous Plants
Safir, Gene R.	12	0.78	0.00	0.22	Plant Pathology/Mycorrhizal Fungi
Schilder, Annemiek C.	14	0.45	0.45	0.10	Plant Pathology/Small Fruits
Sundin, George W.	14	0.50	0.50	0.00	Plant Pathology/Fruit Tree Crops/Phytopathology
Trail, Frances	13	0.27	0.00	0.73	Host Pathogen Interactions
Vargas, Joseph M., Jr.	12	0.26	0.49	0.25	Plant Pathology/Diseases/Sod & Turf
<b>TOTALS:</b>		<b>5.19</b>	<b>3.26</b>	<b>3.55</b>	

### PROJECTS

MICL01206*	Biological Control of Soil and Residue-Borne Plant Pathogens	Safir, G.
MICL01259*	Mycotoxins in Cereal Grains	Hart, L.
MICL01408*	Biological Improvement of Chestnut and Management of the Chestnut Pathogens and Pests	Fulbright, D.
MICL01499	Development and Yield Simulation of Crop and Crop Stresses (Disease/Water/Nutrient) Over Time at Expanded Spatial Scales	Safir, G.
MICL01562	Physiology of Resistance and Induced Resistance to Disease in Potato	Hammerschmidt, R.
MICL01662	Managing Tree Diseases in Michigan	Fulbright, D.
MICL01673	Biology and Control of Pathogens of Field Crops	Hart, L.
MICL01756*	Multidisciplinary Evaluation of New Apple Cultivars	Sundin, G.
MICL01832	Management of Turfgrass Diseases	Vargas, J.

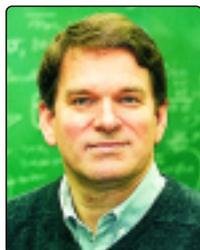
## Plant Pathology (continued)

### PROJECTS

MICL01907	Development and Dispersal of Inoculum for the Wheat Head Scab Fungus, <i>Gibberella zeae</i>	Trail, F.
MICL01954	Epidemiology and Integrated Management of Small Fruit Diseases	Schilder, A.
MICL01966	Management of Soil, Seed and Foliar Diseases of Potato and Vegetable Crops in Michigan in Relation to Environment and Host Specificity	Kirk, W.
MICL02018	Oak Wilt Management in Michigan Using a Hypovirulent Strain of the Pathogen	Fulbright, D.
MICL02059*	Soybean Rust: A New Pest of Soybean Production	Hart, L.
MICL03377	Diseases of Upland and Muck Vegetables and Transplants, Greenhouse Ornamentals, and Their Control	Hausbeck, M.
MICL07657	A Partnership Among Eastern U.S. Carrot Stakeholders to Develop and Implement IPM	Hausbeck, M.
MICL07660	Controlling Fire Blight Disease of Apple Trees FY01	Sundin, G.
MICL07671	Controlling Fire Blight Disease of Apple Trees FY02	Sundin, G.
MICL07672	Controlling Armillaria Root Rot of Cherry	Hammerschmidt, R.
MICL07686	Controlling Fire Blight Disease of Apple Trees	Sundin, G.
MICL07688	Controlling Armillaria Root Rot of Cherry	Hammerschmidt, R.
MICL08251	Genetics of Zearalenone Biosynthesis and Grain Colonization by <i>Gibberella zeae</i>	Trail, F.
MICL08270	Seeking Alternatives to B2 Fungicides and Carbamate Insecticides for Asparagus Production	Hausbeck, M.
MICL08271	The Mechanism of Forcible Discharge of Ascospores in <i>Gibberella zeae</i>	Trail, F.
MICL08285	A Strategy to Advance IPM for Celery Growers in Michigan, California and Florida	Hausbeck, M.

## Plant Research Laboratory (MSU-DOE)

Phone: 353-2270



Kenneth Keegstra, Director

### FACULTY

	RANK	MAES	MSUE	JOINT	INTEREST
He, Sheng-Yang	13	0.25	0.00	0.75	Plant Pathology
Howe, Gregg A.	13	0.23	0.00	0.77	Plant/Insect Defense
Walton, Jonathan D.	12	0.23	0.00	0.77	Plant Pathology
<b>TOTALS:</b>		<b>0.71</b>	<b>0.00</b>	<b>2.29</b>	

### PROJECTS

MICL01886	Mechanisms of Fungal Pathogenicity	Walton, J.
MICL01900	Molecular Genetics of Plant Defense Against Insects	Howe, G.
MICL03376	Interdiscipling Research and Training in the Plant Sciences	Keegstra, K.
MICL08230	Co-Evolution of Phytotoxin Production and Auto-Immunity in a Pathogenic Fungus	Walton, J.
MICL08233	<i>Pseudomonas syringae</i> pv. Tomato Hrp-Controlled Extracellular Proteins	He, S.
MICL08280	Microarray Analysis of the Susceptible Interaction Between Arabidopsis and <i>Pseudomonas syringae</i> pv. Tomato DC3000	Thilmony, R.
MICL08291	Regulation and Manipulation of Gibberellin Metabolism and Stem Growth in Long-Day Rosette Plants	Zeevaart, J.
MICL08293	Role of the Hrp Pilus in Type III Secretion in <i>Pseudomonas syringae</i>	He, S.

## Political Science

Phone: 355-6590

### PROJECTS

MICL03403	Brownfield Redevelopment in Michigan	Hula, R.
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## Population Medicine Center

Phone: 353-5941

### PROJECTS

MICL07664	Epidemiology and Risk Analysis of <i>Mycobacterium bovis</i> in Wild and Domestic Animals in Michigan	Kaneene, J.
MICL07676	Bovine Tuberculosis: Epidemiology, Diagnosis, and Pathogenesis	Kaneene, J.

## Resource Development

Phone: 355-3421



Scott G. Witter, Acting Chair

### FACULTY

	RANK	MAES	MSUE	JOINT	INTEREST
Beckwith, JoAnn	13	0.25	0.25	0.50	Environmental Planning & Management
Bingen, R. James	12	0.40	0.00	0.60	International Development
Bronstein, Daniel A.	12	0.40	0.00	0.60	Environmental Policy & Law
Hamm, Michael W. <sup>2</sup>	12	0.30	0.05	0.65	Sustainable Agriculture
Kakela, Peter J.	12	0.70	0.00	0.30	Natural Resources Management
Kaplowitz, Michael C.	13	0.25	0.00	0.75	Land Use Law
Norris, Patricia E.	13	0.08	0.20	0.72	Land Use
Rosenbaum, Rene P.	13	0.40	0.00	0.60	Community Economic Development
Schultink, Gerhardus	12	0.50	0.00	0.50	Natural Resources Management
Witter, Scott G.	12	0.30	0.00	0.70	Natural Resources Management
<b>TOTALS:</b>		<b>3.58</b>	<b>0.50</b>	<b>5.92</b>	

### PROJECTS

MICL01536	Comparative Indicators for Rural Development, Environmental Planning and Public Policy Formulation	Schultink, G.
MICL01817	Water Security in Our Rural and Urban Communities	Witter, S.
MICL01859	Organic Agriculture and Rural Development Policy	Bingen, J.
MICL01968	Public Acceptance of Plant Biotechnology	Beckwith, J.
MICL01979	The Role of Economics and Law on Environmental Management	Kaplowitz, M.
MICL02028	Psychological Aspects of Environmental Behavior	Beckwith, J.
MICL02060*	Sustaining Local Food Systems in a Globalizing Environment: Forces, Responses, Impacts	Bingen, J.
MICL03352	Mineral Lands Development, Energy Requirements, and Environmental Impacts	Kakela, P.
MICL03358	Michigan Seasonal Agriculture Labor Markets	Rosenbaum, R.

## Social Work (School of)

Phone: 353-8616



Gary R. Anderson, Director

### FACULTY

	RANK	MAES	MSUE	JOINT	INTEREST
Seita, John R.	14	0.25	0.25	0.50	Youth Development
<b>TOTALS:</b>		<b>0.25</b>	<b>0.25</b>	<b>0.50</b>	

### PROJECTS

MICL02056	A Study of Factors That Impact Transition for Young People Who Age Out of Foster Care	Seita, J.
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# Sociology

Phone: 355-6632



Steven J. Gold, Acting Chair

## FACULTY

	RANK	MAES	MSUE	JOINT	INTEREST
Busch, Lawrence M.	12	0.47	0.00	0.53	Agriscience Structure/Agricultural Research Policy
Harris, Craig K.	13	0.50	0.00	0.50	Sociology of Agriculture/Environmental Sociology/Sociology of Fisheries
Johnson, Nan E.	12	0.50	0.00	0.50	Demography
Rudy, Alan P.	14	0.30	0.00	0.70	Sociology of Agriculture
<b>TOTALS:</b>		<b>1.77</b>	<b>0.00</b>	<b>2.23</b>	

## PROJECTS

MICL01874	Social Processes in Disability and Death for Nonmetro Americans	Johnson, N.
MICL01926	The Management of Risk in Agrifood and Natural Resource Systems	Harris, C.
MICL01939	Community Responses to Hazardous Waste Crises: Alternatives to Increase Public Involvement	Aronoff, M.
MICL01950	Regional Agricultures, Landscapes and Ecologies	Rudy, A.
MICL01969*	Rural Labor Markets: Workers, Firms and Communities in Transition	Bokemeier, J.
MICL01992*	Systems Analyses of the Relationships of Agriculture and Food Systems to Community Health	Ten Eyck, T.
MICL02005	Standards and Strategies in Commodity Subsector Organization	Busch, L.

# Water Research (Institute of)

Phone: 353-3744

## PROJECTS

MICL02026*	Development and Evaluation of TMDL Planning and Assessment Tools and Processes	Bartholic, J.
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## Faculty Appointments

	MAES	MSUE	JOINT
<b>GRAND TOTALS</b>	<b>137.44</b>	<b>45.00</b>	<b>138.56</b>

<sup>1</sup> Elton R. Smith Professor in Food and Agricultural Policy

<sup>2</sup> C.S. Mott Distinguished Professor of Sustainable Agriculture

<sup>3</sup> John A. Hannah Distinguished Professor

<sup>4</sup> Homer Nowlin Chair of Water in Agricultural and Natural Resources Systems

<sup>5</sup> Clinton E. Meadows Endowed Chair

<sup>6</sup> Partnerships for Ecosystem Research and Management (PERM) positions with salary funded by the Michigan Department of Natural Resources

<sup>7</sup> Homer Nowlin Chair of Consumer Responsive Agriculture

<sup>8</sup> Meadow Brook Endowed Chair

*Futures* is the magazine of the Michigan Agricultural Experiment Station. If you live in the United States and would like to receive *Futures* free of charge, write to: *Futures* editor, MAES, 109 Agriculture Hall, MSU, East Lansing, MI 48824-1039, call 517-355-0123 or e-mail [depolo@msu.edu](mailto:depolo@msu.edu). *Futures* is also available for viewing on the MAES web site at <<http://www.maes.msu.edu>>

## Winter 2003 Vol. 21 No. 1



The U.S. Department of Agriculture's Center for Food Safety and Applied Nutrition has a handbook titled the "Bad Bug Book" that provides basic facts about food-borne pathogenic microorganisms and natural toxins. The list of these "bugs" is a little intimidating for the average consumer. The good thing is that consumers do have

information available, such as the "Bad Bug Book" and other informational materials, to educate themselves about food-borne pathogens and how to avoid illness from them.

MAES scientists are part of that information and education process. Their research on food-borne pathogens paves the way to better understanding these "bugs" and how they can be either eliminated or reduced in number so as to be less of a threat to consumers.

Ewen Todd, director of the National Food Safety and Toxicology Center (NFSTC) at Michigan State University, and Les Bourquin, MAES food scientist, start this issue of *Futures* by answering some consumer food safety concerns. Arming consumers with the right information about food safety practices is one step. Todd and Bourquin also discuss how proper sanitation and food handling habits, combined with the regulatory codes and vigilant government inspections, can alleviate or avert food safety problems.

MAES scientists are also on the front lines in the search for answers to the biggest pathogen problems. Thomas Whittam, MAES researcher and Hannah Professor in the National Food Safety and Toxicology Center, and the departments of Food Science and Human Nutrition, and Microbiology and Molecular Genetics, is delving back in the evolution of the *E. coli* bacterium, to try to find how the deadly strain O157:H7 developed from such a benign bacterial family. John Linz, MAES food scientist, and Linda Mansfield, MAES animal scientist, are trying to figure out how natural transformation in *Campylobacter jejuni* is making it resistant to antibiotics. Linz has also patented an assay that can find antibiotic-resistant *Campylobacter* in infected patients so that physicians will know how to treat them.

*Listeria monocytogenes* is food-borne pathogen that can live in hogs and cattle without causing problems, but creates illness in humans. MAES animal scientist Mel Yokoyama is looking at natural methods to reduce numbers of *L. monocytogenes* in animals and on the farm. *L. monocytogenes* has also been an occasional problem in delicatessen meats. MAES food scientist Elliot Ryser is studying the incidence of *L. monocytogenes* in delicatessen equipment such as knives and slicing machines. Ryser's research team is the first in the United States to study the transfer rate of *L. monocytogenes* in delicatessens, and the information will be used by the U.S. Department of Agriculture (USDA) to refine its standards about the risk of listeriosis to consumers.

MAES agricultural engineer Brad Marks, along with MSU food scientists Elliot Ryser, Alden Booren and Denise Smith (now at the University of Idaho), is creating computer models that can predict when, during processing, a pathogen in a meat product is destroyed. Perfecting the models before incorporating them into an actual processing line increases the efficiency and reduces the processing industry's cost to meet food safety regulations.

Do these food safety regulations and codes really help prevent food-borne illness outbreaks? Or are they just another layer of governmental regulations that frustrates processors, both economically and technologically? Is food really safer, and does the consumer really know or care? MAES food scientist Leslie Bourquin and MSU sociologist Toby Ten Eyck are looking at these and other questions as the fruit juice and cider industries in Michigan begin implementing the hazard analysis critical control points (HACCP) system mandated by the FDA.

Methods to track food-borne illness outbreaks are still "in the stone age," according to Paul Bartlett, MSU epidemiologist. Working in the NFSTC, Bartlett and his graduate assistant, Holly Wethington, have created the RUSick2 Food-borne Disease Forum, featuring a <[www.RUSick2.msu.edu](http://www.RUSick2.msu.edu)> Web site, where the public can report suspicions of food-borne illness and see if others are becoming ill as well. Since its inception in November 2002, the site has also assisted the Ingham County Health Department in identifying a cluster of individuals who became sick from eating the same food. Bartlett hopes to expand the forum statewide.

The MAES supports the research done at NFSTC through its scientists and funding support. Food safety research is vital in keeping a healthy, safe, nutritious food supply available across Michigan and the United States. We highlight a few examples of this research in this issue of *Futures*.

# MAES Contributors

July 1, 2002 to June 30, 2003

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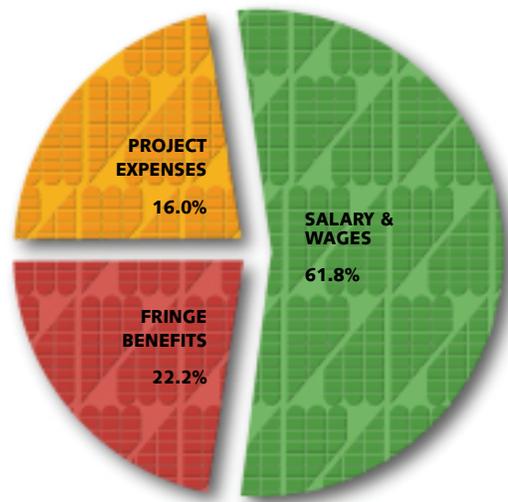
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Land O'Lakes, Inc.	Michigan Pear Research Association	MSU Extension
Lansmont Corporation	Michigan Potato Industry Commission	National Aeronautics & Space Administration
Lehigh Agricultural & Biological Services, Inc.	Michigan Sea Grant College Program	National Cancer Institute at Frederick
LESCO, Inc.	Michigan Soybean Promotion Committee	National Center for Manure & Animal Waste Management
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Livestock Marketing Information Center	Michigan State Horticultural Society Trust	National Foundation for IPM Education, Inc.
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MBG Marketing	Michigan Sugarbeet Advancement Program	National Institutes of Health
MeadWestvaco Corporation	Michigan Technological University	National Pork Board
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National Science Foundation	Rutgers, The State University of New Jersey	U.S. Department of Agriculture
National Turfgrass Federation, Inc.	Saatzucht Steinach GmbH	U.S. Department of Education
Naturize BioSciences, Inc.	Saginaw County	U.S. Department of Energy
New York Department of Agriculture	Scotts Company	U.S. Department of Health & Human Services
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North American Strawberry Growers Association	Seminis Vegetable Seeds, Inc.	U.S. Department of the Interior
North Carolina State University	SePRO Corporation	U.S. Department of the Navy
North Dakota State University	Sipcam Agro USA, Inc.	U.S. Environmental Protection Agency
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# Financial Report

July 1, 2002 to June 30, 2003

## DISTRIBUTION OF APPROPRIATED FUNDS



<b>INCOME:</b>		<b><u>\$78,707,849</u></b>
<b>Federal Appropriations</b>	.....	<b>\$.5,128,318</b>
Hatch		\$ 3,906,140
McIntire-Stennis		\$ 203,563
Hatch RRF		\$ 923,850
Hatch Animal and Disease, Section 1433		\$ 94,765
<b>State Appropriations</b>	.....	<b>\$.35,558,985</b>
<b>TOTAL APPROPRIATIONS:</b>	.....	<b>\$.40,687,303</b>
<b>Grants — Federal, State and Private</b>	.....	<b>\$.38,020,546</b>

<b>EXPENSES:</b>		<b><u>\$78,707,849</u></b>
Salaries		\$25,161,634
Fringe Benefits		\$ 9,013,110
Project Expenses		\$ 6,512,559
Grants — Federal, State and Private*		\$38,020,546

## Personnel

(Full-time Equivalents Funded From Appropriated Funds)

<b>Research Staff**</b>	<b>147.59</b>
Professors	71.07
Associate Professors	26.76
Assistant Professors	27.90
Research Associates and Specialists	21.86
<b>Support Staff</b>	<b>161.38</b>
Administrative Professionals	92.00
Supervisors	23.90
Clerical	34.99
Technicians	10.49

\* Grants are reported using most recent three-year average

\*\* Does not include department chairpersons/unit administrators

MICHIGAN AGRICULTURAL EXPERIMENT STATION

J. Ian Gray, Director

109 Agriculture Hall

Michigan State University

East Lansing, Michigan 48824-1039

