

2001 Annual Report



Michigan State University



Michigan Agricultural
Experiment Station 

for your future



2001 Annual Report

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

This issue is dedicated to MAES researchers Jack Giacin (School of Packaging), Carl Ramm (Department of Forestry), Christopher Vanderpool (Department of Sociology) and Leland Velicer (Department of Microbiology and Molecular Genetics) who died this past year while still actively pursuing their research agendas.

Their contributions to the MAES continue to be realized, and they are missed by the MAES family.

Michigan Agricultural Experiment Station

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

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Orchid photo on cover by Erik Runkle. Teacher and students photo courtesy USDA Online Photography Center. All other illustrative photos by Kurt Stepnitz, MSU photographer.

All chairperson photos by Harley Seeley and Kurt Stepnitz, MSU photographers.

Research for Your Future

2001



Dr. J. Ian Gray

“Problem solving with today’s tools will not be sufficient to address tomorrow’s challenges . . . the solid foundation of the MAES supports efforts to prepare for those challenges now.”

The guiding principle of the Michigan Agricultural Experiment Station is “Research for Your Future,” and for the MAES scientists, administrators, field station managers and staff members, preparing for that future began the day they joined the MAES. Emerging successes in programs and research allow the MAES to continue building on its solid foundation as it moves through the 21st century.

In the plant sciences, MAES scientist and plant molecular biologist Michael Thomashow was named the 2001 recipient of the Alexander von Humboldt Foundation Award. Thomashow is internationally recognized for his work on the molecular mechanisms of cold acclimation in plants. The von Humboldt committee judged Thomashow’s research on environmental stress tolerance in plants to extreme temperature as having far-reaching impact for agriculture. The Alexander von Humboldt Award is considered the most prestigious award for agricultural research in the United States. Thomashow is an excellent scientist and a major contributor to the MAES, and research programs focusing on relationship between plants and environmental stress. Nutritional genomics, such as the work being done by MAES biochemist and molecular biologist Dean Della Penna, is addressing basic questions in the manipulation of vitamin E synthesis in a variety of agricultural crops. The answers to these questions can lead to methods for producing more plant foods nutritionally rich in vitamins, which can especially benefit countries where nutritional deficiencies are common.

Food safety is an ongoing societal concern, and the MAES’s investment in the National Food Safety and Toxicology Center at MSU continues to play an important role in developing new techniques to detect food-borne pathogens and prevent them from contaminating the food supply. The MAES is working closely with the center’s new director, Ewen Todd, and deputy director Edward Mather to support research to meet the challenges in food safety.

Concern about infectious animal disease outbreaks and the threat of such outbreaks in Michigan have led MSU's College of Veterinary Medicine to develop the concept for a Center for Emerging Infectious Diseases on campus. This center would monitor, prevent and control emerging infectious diseases in the state and serve as a model for national and international programs. Several MSU departments and organizations, including the MAES and state officials in the departments of Agriculture, Natural Resources and Community Health, are also involved.

The Michigan Life Sciences Corridor (MLSC), which is primarily made up of four of Michigan's research institutions — MSU, Wayne State University, the University of Michigan and the Van Andel Institute — has a mission to enhance, through collaboration, research in the life sciences and develop Michigan's biotechnology industries. The state will invest some \$1 billion over 20 years to develop new technologies, and other public and private sources are expected to invest billions more in this effort over time. Fourteen grant proposals submitted by MSU researchers received funding in December 2000, including five by MAES faculty members Jack Priess and Jon Kaguni, professors of biochemistry and molecular biology; Jack Harkema, professor of veterinary pathology; Gregg Howe, assistant professor in the MSU Department of Energy Plant Research Laboratory; and John Linz, professor of food science and human nutrition.

Sponsored in part by the MAES, the Families and Communities Together (FACT) coalition links MSU's researchers and resources with community partners and initiatives with the goal of supporting the health and well-being of Michigan's children, families and communities. The coalition focused on two major issues this year: youth development in communities and schools, and enhancing civic engagement and community vitality. FACT-led projects begun with grant funding have now expanded into sustainable, long-lasting research for children,

families and communities. Other FACT programs, including NEAT (Nutrition Education Aimed at Toddlers) and Bridging the Gap: Grandparents Raising Grandchildren, have also received additional outside funding to continue their vital work.

The MAES welcomes Jeffrey Armstrong as the new dean of the College of Agriculture and Natural Resources (CANR), Marietta Baba as the new dean of the College of Social Science and Margaret Bethel as director of MSU Extension. The partnerships with the colleges of Agriculture and Natural Resources, Natural Science, Social Science, Human Ecology, and Veterinary Medicine; along with MSU Extension, LouAnna Simon, MSU provost; and Robert Huggett, vice president for Research and Graduate Studies, are critical for the continuation of joint research programs.

As programs materialize, the MAES strives to maintain a balance between applied and basic research and appreciates the input of stakeholders toward the identification of research priorities and their funding of selected projects. We also thank the faculty members, graduate assistants and postdoctoral students from all the departments and colleges that are part of the MAES for their research efforts, and those who work with them — the farm managers, technicians and staff members — who provide the skills and work necessary to accomplish research goals.

Problem solving with today's tools will not be sufficient to address tomorrow's challenges. The solid foundation of the MAES supports efforts to prepare for those challenges now with strategic research that will ultimately improve the quality of life for Michigan's citizens.



J. Ian Gray, Director
Michigan Agricultural Experiment Station

Michigan Agricultural Experiment Station

As of 10-1-2001

J. Ian Gray, Director

Janet L. Bokemeier, Associate Director

Gary D. Lemme, Associate Director

Doreen K. Woodward, Assistant Director

Debbie McCaffrey, Administrative Assistant

Linda Haubert, Support Staff

Nan Judy, Support Staff

Alice Noel, Support Staff

Martha Lovejoy, Support Staff

Isidra Pérez, Support Staff



MAES Affiliated Deans

As of 10-1-2001

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 10-1-2001

Larry G. Hamm, Chairperson
Agricultural Economics

Ajit K. Srivastava, Chairperson
Agricultural Engineering

Maynard G. Hogberg, Chairperson
Animal Science

Kirk L. Heinze, Chairperson
ANR Education and Communication Systems

William L. Smith, Chairperson
Biochemistry and Molecular Biology

Douglas D. Buhler, Chairperson
Crop and Soil Sciences

Edward J. Grafius, Chairperson
Entomology

Anne K. Soderman, Acting Chairperson
Family and Child Ecology

Thomas G. Coon, Acting 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, Acting Chairperson
Horticulture

Sally I. Helvenston, Acting Chairperson
Human Environment and Design

L. Patrick Hart, Acting Director
Center for Integrated Plant Systems

Michael J. Klug, Director
Kellogg Biological Station

Charles J. Reid, Director
Land Management

Frederik J. Derksen, Chairperson
Large Animal Clinical Sciences

Jerry B. Dodgson, Chairperson
Microbiology and Molecular Genetics

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

Bruce R. Harte, Director
School of Packaging

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

Willie M. Reed, Interim Chairperson
Pathobiology and Diagnostic Investigation

William S. Spielman, Chairperson
Physiology

Frank W. Ewers, Acting Chairperson
Plant Biology

Raymond Hammerschmidt, Acting Chairperson
Plant Pathology

Kenneth Keegstra, Director
MSU-DOE Plant Research Laboratory

Richard E. Groop, Director
Center for Remote Sensing

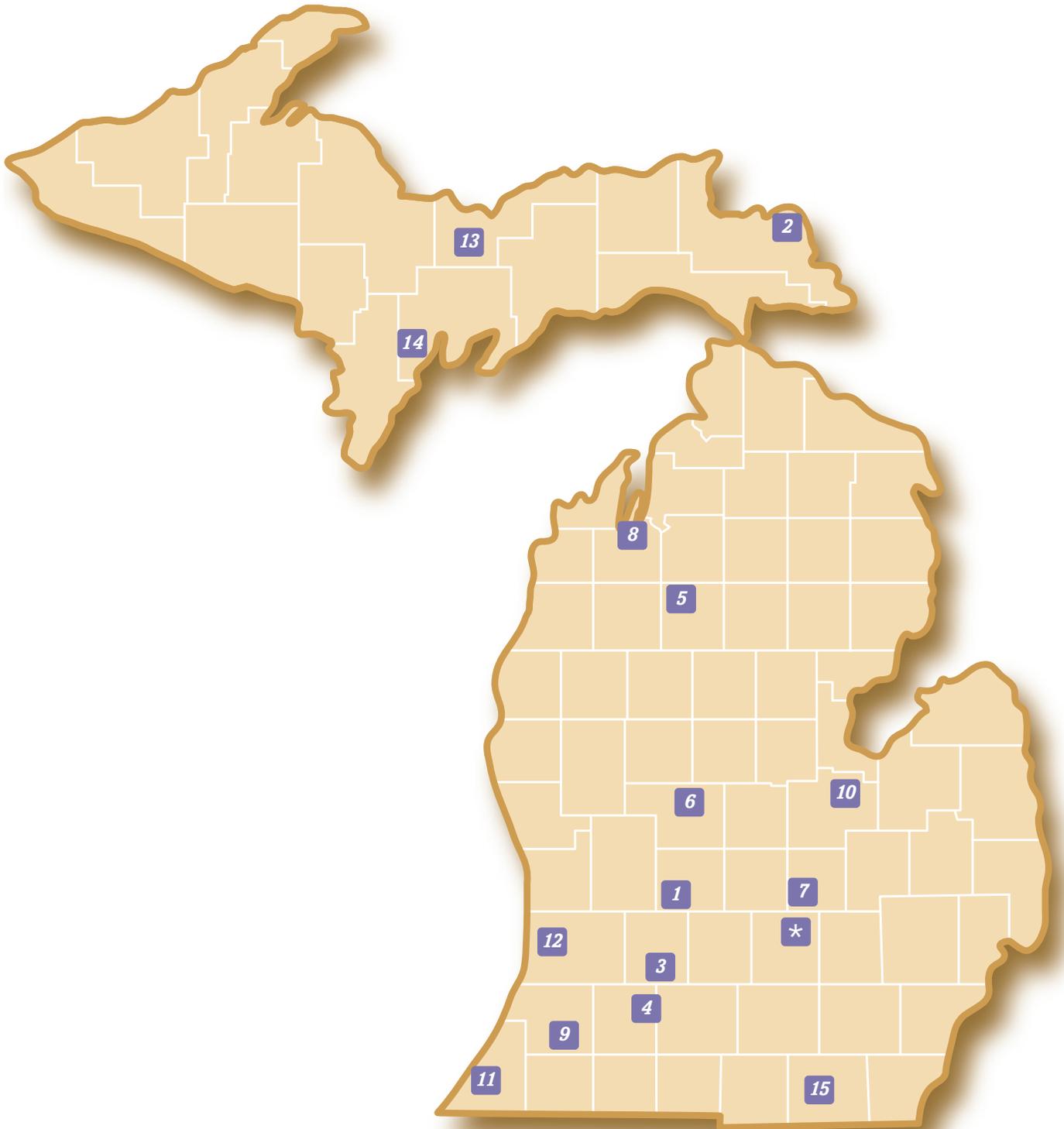
Scott G. Witter, Acting Chairperson
Resource Development

Gary R. Anderson, Director
School of Social Work

Thomas L. Conner, Chairperson
Sociology

Jon F. Bartholic, Director
Institute of Water Research

Michigan Agricultural Experiment Station Outlying Stations — 10-1-2001



- 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: 616-671-2351
 Bernie Knezek 517-353-4569
Director, Agricultural Programs
 Mike Klug 616-671-2341
Director, Programs and Development
- 4. W. K. KELLOGG EXPERIMENTAL FOREST**
Established 1932
 7060 N. 42nd Street
 Augusta, MI 49012
 Phone: 616-731-4597
 FAX: 616-731-4597
 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 McBrides Road
 Lakeview, MI 48850
 Phone: 989-365-3473
 FAX: 989-831-7263
 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: 616-782-5652 or
 616-731-4597
 Greg Kowalewski
Nonresident Forester
- 10. SAGINAW VALLEY BEET AND BEAN RESEARCH FARM**
Established 1971
 3066 S. Thomas Road
 Saginaw, MI 48603
 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: 616-944-1477
 FAX: 616-944-3106
 Dave Francis
Farm Manager
 Thomas Zabadal
Coordinator
- 12. TREVOR NICHOLS RESEARCH COMPLEX**
Established 1967
 6237 124th Avenue
 Fennville, MI 49408
 Phone: 616-561-5040
 FAX: 616-561-5314
 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
 Shorty Parks
Farm Manager
- ★ **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 10-1-2001

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

NAME	DEPARTMENT	NAME	DEPARTMENT
Adams, Gerard C.	Plant Pathology	Bursian, Steven	Animal Science
Adams, Gerard C.	Plant Biology	Burton, Jeanne L.	Animal Science
Allen, Michael	Animal Science	Burton, Zachary F.	Biochemistry
Allison, Richard F.	Plant Pathology	Busch, Lawrence M.	Sociology
Allison, Richard F.	Plant Biology	Buskirk, Daniel	Animal Science
Alocilja, Evangelyn C.	Agricultural Engineering	Cameron, Arthur C.	Horticulture
Ayers, George S.	Entomology-CANR	Campa, Henry III	Fisheries & Wildlife
Bagdasarian, Michael	Microbiology & Molecular Genetics	Carlson, William H.	Horticulture
Baker, John C.	Large Animal Clinical Sciences	Cash, Jerry N.	Food Science & Human Nutrition
Balander, Richard J.	Animal Science	Champness, Wendy C.	Microbiology & Molecular Genetics
Banks, Bobby D.	Animal Science	Cheney, Laura L.	Agricultural Economics
Bates, Ronald O.	Animal Science	Chenoweth, Wanda L.	Food Science & Human Nutrition
Batie, Sandra S. ¹	Agricultural Economics	Chou, Karen	Animal Science
Beaudry, Randolph M.	Horticulture	Clarke, Robert H.	Packaging
Beckwith, JoAnn	Resource Development	Claycombe, Kate	Food Science & Human Nutrition
Beede, David ⁵	Animal Science	Coe, Paul H.	Animal Science
Behe, Bridget K.	Horticulture	Coon, Thomas G.	Fisheries & Wildlife
Bell, Thomas G.	Pathobiology	Coussens, Paul M.	Animal Science
Bence, James R. ⁶	Fisheries & Wildlife	Crawford, Eric W.	Agricultural Economics
Benning, Christoph	Biochemistry	Cregg, Bert M.	Horticulture
Bennink, Maurice R.	Food Science & Human Nutrition	Crum, James L.	Crop & Soil Sciences
Benson, Margaret	Animal Science	Dazzo, Frank B.	Microbiology & Molecular Genetics
Berglund, Kris A.	Agricultural Engineering	Dazzo, Frank B.	Crop & Soil Sciences
Bickert, William G.	Agricultural Engineering	Della Penna, Dean	Biochemistry
Biernbaum, John A.	Horticulture	Dersch, Eckhart	Resource Development
Bingen, R. James	Resource Development	Dickmann, Donald I.	Forestry
Bird, George W.	Entomology-CANR	DiFonzo, Christina D.	CIPS
Bitsch, Vera	Agricultural Economics	DiFonzo, Christina D.	Entomology-CANR
Black, J. Roy	Agricultural Economics	Dilley, David R.	Horticulture
Bolin, Carole A.	Pathobiology	Dolan, Kirk D.	Food Science & Human Nutrition
Bolin, Steven R.	Pathobiology	Dolan, Kirk D.	Agricultural Engineering
Booren, Alden M.	Food Science & Human Nutrition	Dong, Ke	Entomology-CANR
Bourquin, Leslie D.	Food Science & Human Nutrition	Douches, David S.	Crop & Soil Sciences
Boyd, Stephen A.	Crop & Soil Sciences	Doumit, Matthew E.	Animal Science
Bremigan, Mary T. ⁶	Fisheries & Wildlife	Doumit, Matthew E.	Food Science & Human Nutrition
Breznak, John A.	Microbiology & Molecular Genetics	Downes, Theron W.	Packaging
Bristow, Catherine	Entomology-CANR	Epperson, Bryan K.	Forestry
Bronstein, Daniel A.	Resource Development	Ernst, Catherine W.	Animal Science
Brook, Roger C.	Agricultural Engineering	Erskine, Ronald J.	Large Animal Clinical Sciences
Bucholtz, Herbert F.	Animal Science	Fernandez, Rodney	Horticulture
Bughrara, Suleiman S.	Crop & Soil Sciences	Ferris, Theodore A.	Animal Science

NAME	DEPARTMENT
Flore, James A.	Horticulture
Fogwell, Ralph L.	Animal Science
Foster, Eunice F.	Crop & Soil Sciences
Fraker, Pamela J.	Biochemistry
Fraker, Pamela J.	Food Science & Human Nutrition
Frank, Kevin W.	Crop & Soil Sciences
Freed, Russell D.	Crop & Soil Sciences
Friedman, Steven K.	Forestry
Friedman, Steven K.	Geography
Fulbright, Dennis W.	Plant Pathology
Gage, Douglas A.	Biochemistry
Gage, Stuart H.	Entomology-CANR
Gangur, Venugopal	Food Science & Human Nutrition
Garling, Donald L.	Fisheries & Wildlife
Gerrish, John B.	Agricultural Engineering
Giesy, John P.	National Food Safety & Toxicology Center
Grooms, Daniel L.	Large Animal Clinical Sciences
Grumet, Rebecca	Horticulture
Gut, Larry	Entomology-CANR
Guyer, Daniel E.	Agricultural Engineering
Hammerschmidt, Raymond	Plant Pathology
Han, Kyung-Hwan	Forestry
Hancock, James F.	Horticulture
Hanson, Eric J.	Horticulture
Hanson, Steven D.	Agricultural Economics
Harkema, Jack	Pathobiology
Harris, Craig K.	Sociology
Harsh, Stephen B.	Agricultural Economics
Hart, James B., Jr.	Forestry
Hart, L. Patrick	Plant Pathology
Harwood, Richard R. ²	Crop & Soil Sciences
Hausbeck, Mary K.	Plant Pathology
Hausinger, Robert P.	Microbiology & Molecular Genetics
Hausinger, Robert P.	Biochemistry
Hayes, Daniel B. ⁶	Fisheries & Wildlife
He, Sheng-Yang	Plant Research Laboratory
Heins, Royal D.	Horticulture
Herd, Thomas H.	Large Animal Clinical Sciences
Hernandez, Ruben J.	Packaging
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
Hollingworth, Robert M.	Entomology-CANR

NAME	DEPARTMENT
Horan, Richard D.	Agricultural Economics
Hord, Norman G.	Food Science & Human Nutrition
Howe, Gregg A.	Plant Research Laboratory
Howell, Gordon S.	Horticulture
Huang, Zachary	Entomology-CANR
Iezzoni, Amy F.	Horticulture
Imig, David R.	Family & Child Ecology
Ireland, James J.	Animal Science
Isaacs, Rufus	Entomology-CANR
Jacobs, Lee W.	Crop & Soil Sciences
Jarosz, Andrew M.	Plant Biology
Jarosz, Andrew M.	Plant Pathology
Johnson, Nan E.	Sociology
Jones, Alan L.	Plant Pathology
Jones, Michael L. ⁶	Fisheries & Wildlife
Jump, Donald B.	Physiology
Kaguni, Jon M.	Biochemistry
Kakela, Peter J.	Resource Development
Kamdem, Donatien-Pascal	Forestry
Kaneene, John B.	Large Animal Clinical Sciences
Kaplowitz, Michael C.	Resource Development
Keefe, Dennis R.	Family & Child Ecology
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
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
La Pres, John J.	Biochemistry
Laboski, Carrie A. M.	Crop & Soil Sciences
Landis, Douglas A.	Entomology-CANR
Lang, Gregory A.	Horticulture
Lang, Nancy Suzanne	Horticulture
Lee, Julian J. L.	Packaging
Leefers, Larry A.	Forestry
Leep, Richard H.	Crop & Soil Sciences
Lenski, Richard E. ³	Crop & Soil Sciences
Li, Weiming ⁶	Fisheries & Wildlife
Linz, John E.	Food Science & Human Nutrition
Liu, Jianguo ⁶	Fisheries & Wildlife
Lloyd, James W.	Agricultural Economics
Loudon, Theodore L.	Agricultural Engineering

NAME	DEPARTMENT	NAME	DEPARTMENT
Lownds, Norman K.	Horticulture	Propst, Dennis B.	Park, Recreation, & Tourism Resources
Lupi, Frank ⁶	Agricultural Economics	Pursley, James R.	Animal Science
Lupi, Frank ⁶	Fisheries & Wildlife	Pysarchik, Dawn I.	Human Environment & Design
Maes, Roger K.	Microbiology & Molecular Genetics	Raikhel, Alexander S.	Entomology-CANR
Malmström, Carolyn	Plant Biology	Raper, Kellie K.	Agricultural Economics
Mansfield, Linda	Large Animal Clinical Sciences	Reddy, C. Adinarayana	Microbiology & Molecular Genetics
Marks, Bradley P.	Agricultural Engineering	Renner, Karen A.	Crop & Soil Sciences
Maurer, Brian A. ⁶	Fisheries & Wildlife	Ricks, Donald J.	Agricultural Economics
McCullough, Deborah G.	Entomology-CANR	Riley, Shawn J.	Fisheries & Wildlife
McDonough, Maureen H.	Forestry	Ritchie, Harlan D.	Animal Science
Meek, Katheryn	Pathobiology	Roberson, Kevin D.	Animal Science
Melakeberhan, Haddish	Entomology-CANR	Robertson, G. Phillip	Crop & Soil Sciences
Merritt, Richard W.	Entomology-CANR	Robinson, Norman E.	Large Animal Clinical Sciences
Millenbah, Kelly F.	Fisheries & Wildlife	Robison, Lindon J.	Agricultural Economics
Miller, James R.	Entomology-CANR	Rogers, John N. III.	Crop & Soil Sciences
Mokma, Delbert L.	Crop & Soil Sciences	Romsos, Dale R.	Food Science & Human Nutrition
Myers, Robert S.	Agricultural Economics	Rook, Joseph S.	Large Animal Clinical Sciences
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	Animal Science
Nielsen, Brian D.	Animal Science	Rudy, Alan P.	Sociology
Norris, Patricia E.	Resource Development	Rugh, Clayton L.	Crop & Soil Sciences
Norris, Patricia E.	Agricultural Economics	Runkle, Eric S.	Horticulture
Northcott, William J.	Agricultural Engineering	Rust, Steven	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-CANR	Sang, Tao	Plant Biology
Orth, Michael	Animal Science	Schemske, Douglas W.	Horticulture
Osburn, Wesley N.	Food Science & Human Nutrition	Schiamburg, Lawrence R.	Family & Child Ecology
Osburn, Wesley N.	Animal Science	Schilder, Annemiek C.	Plant Pathology
Osteryoung, Katherine W.	Plant Biology	Schindler, Melvin S.	Biochemistry
Patterson, Jon S.	Pathobiology	Schmid, A. Allan	Agricultural Economics
Peacor, Scott D.	Fisheries & Wildlife	Schmidt, Thomas M.	Microbiology & Molecular Genetics
Penner, Donald	Crop & Soil Sciences	Schroeder, Joseph J.	Food Science & Human Nutrition
Perry, Ronald L.	Horticulture	Schultink, Gerhardus	Resource Development
Person, Howard L.	Agricultural Engineering	Schutzki, Robert E.	Horticulture
Pestka, James J.	Food Science & Human Nutrition	Schwab, Gerald D.	Agricultural Economics
Peterson, H. Christopher	Agricultural Economics	Schweikhardt, David B.	Agricultural Economics
Peyton, R. Benny	Fisheries & Wildlife	Scriber, J. Mark	Entomology-CANR
Poff, Ken	Plant Biology	Scribner, Kim T. ⁶	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	Seita, John R.	Social Work
Prince, Harold H.	Fisheries & Wildlife	Singh, Sher Paul	Packaging

NAME	DEPARTMENT
Sink, Kenneth C.	Horticulture
Skole, David L.	Geography
Slocum, Ann C.	Human Environment & Design
Smith, George W.	Animal Science
Smitley, David R.	Entomology-CANR
Smucker, A.J.M.	Crop & Soil Sciences
Snapp, Sieglinde S.	Crop & Soil Sciences
Snapp, Sieglinde S.	Horticulture
Song, Won O.	Food Science & Human Nutrition
Sontag, M. Suzanne	Human Environment & Design
Soranno, Patricia A.	Fisheries & Wildlife
Staatz, John S.	Agricultural Economics
Steffe, James F.	Agricultural Engineering
Steffe, James F.	Food Science & Human Nutrition
Stehr, Frederick W.	Entomology-CANR
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
Surbrook, Truman C.	Agricultural Engineering
Suvedi, Murari	ANR Education & Communication Systems
Swinton, Scott M.	Agricultural Economics
Tempelman, Robert	Animal Science
Teppen, Brian J.	Crop & Soil Sciences
Thelen, Kurt D.	Crop & Soil Sciences
Thiem, Suzanne	Entomology-CANR
Thomashow, Michael F.	Microbiology & Molecular Genetics
Thomashow, Michael F.	Crop & Soil Sciences
Tiedje, James M.	Microbiology & Molecular Genetics
Tiedje, James M.	Crop & Soil Sciences
Trail, Frances	Plant Pathology
Triezenberg, Steven J.	Biochemistry
Trottier, Nathalie	Animal Science
Ustunol, Zeynep	Food Science & Human Nutrition
Van Ee, Gary R.	Agricultural Engineering
van Nocker, Steven R.	Horticulture
van Ravenswaay, Eileen O.	Agricultural Economics
VandeHaar, Michael	Animal Science
Vander Stoep, Gail A.	Park, Recreation, & Tourism Resources
Vargas, Joseph M., Jr.	Plant Pathology
Vogt, Christine A.	Park, Recreation, & Tourism Resources
von Bernuth, Robert D.	Agricultural Engineering
Walker, Edward D.	Entomology-CANR

NAME	DEPARTMENT
Walker, Rosemary A.	Family & Child Ecology
Walters, Michael B. ⁶	Forestry
Walton, Jonathan D.	Plant Research Laboratory
Wang, Dechun	Crop & Soil Sciences
Wang, John L.	Biochemistry
Ward, Richard W.	Crop & Soil Sciences
Warncke, Darryl D.	Crop & Soil Sciences
Watson, J. Throck	Biochemistry
Weatherspoon, Dave D.	Agricultural Economics
Weber, Michael T.	Agricultural Economics
Weber-Nielsen, Miriam S.	Animal Science
Whalon, Mark E.	Entomology-CANR
Whims, Fred R.	ANR Education & Communication Systems
Whipple, Judith M.	Agricultural Economics
Whittam, Thomas S.	Microbiology & Molecular Genetics
Whittam, Thomas S.	Food Science & Human Nutrition
Williams, Kurt	Pathobiology
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
Zandstra, Bernard H.	Horticulture
Zanella, Adroaldo	Animal Science
Zile, Maija H.	Food Science & Human Nutrition

¹ Elton Smith Endowed Chair

² C.S. Mott Distinguished Professor of Sustainable Agriculture

³ Hannah Professor for Microbial Ecology and Plant Sciences

⁴ Nowlin Professor for Water Research (50 percent of the appointment is paid by the endowment)

⁵ Clinton Meadows Chair

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

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 10-1-2001. Faculty members with dual MAES appointments are listed in both of the departments in which they serve.

SCIENTISTS

MAES = Michigan Agricultural Experiment Station
 MSUE = Michigan State University Extension
 Joint = Joint appointment in an MAES-affiliated College or Department
 12 = Professor
 13 = Associate Professor
 14 = Assistant Professor

PROJECTS

Projects listed are as of 10-1-2001.
 *Signifies Multistate Project

Agricultural Economics

Phone: 355-4563



Larry G. Hamm, Chair

FACULTY

	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
Batie, Sandra S. ¹	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
Hanson, Steven D.	12	0.80	0.00	0.20	Agricultural Finance
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 ⁶	14	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.	13	0.75	0.00	0.25	Price Analysis & Research Policy
Peterson, H. Christopher	13	0.40	0.00	0.60	Food and Agribusiness Management
Raper, Kellie K.	14	0.75	0.00	0.25	Livestock Industry Marketing Economist
Ricks, Donald J.	12	0.20	0.70	0.10	Food System Marketing
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.	13	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.	13	0.70	0.00	0.30	Production Economics

Agricultural Economics (continued)

van Ravenswaay, Eileen O.	12	0.75	0.00	0.25	Environmental Economics & Public Policy
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.	14	0.50	0.50	0.00	Dairy Farm Management Economics
TOTALS:		13.87	5.27	8.86	
<i>Adjustment for PERM Positions</i>		<i>-0.15</i>	<i>-0.42</i>	<i>-0.43</i>	
ADJUSTED TOTALS		13.72	4.85	8.43	

PROJECTS

MICL01518*	Benefits and Costs of Resource Policies Affecting Public and Private Land	Hoehn, J.
MICL01519*	Private Strategies, Public Policies, and Food System Performance	van Ravenswaay, E.
MICL01530*	Fruit and Vegetable Supply-Chain Management, Innovations, and Competitiveness	Ricks, D.
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.
MICL01666*	Impact Analysis and Decision Strategies for Agricultural Research	Oehmke, J.
MICL01732	Political Economy of National and International Agricultural Policies and Policy Decision Processes	Schweikhardt, D.
MICL01770	Economic Analysis of Public Policies Affecting the Performance of Michigan Agriculture	Batie, S.
MICL01788	Economic Analysis of Tactical and Operational Decisions on Farms and Design/Development of Information Systems	Harsh, S.
MICL01790	Structural Adjustments in Michigan's Pork and Beef Sectors	Black, J.
MICL01815	The Political Economy of U.S. Agricultural Research, Commodity and Trade Policy	Oehmke, J.
MICL01844	Risk Analysis and Management in U.S. Agriculture	Myers, R.
MICL01850	The Role of Information and Market Transactions in Land Use Policy	Norris, P.
MICL01865	Role of Information and Transactions Costs in Coordination of Global Food Systems	Staatz, J.
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.
MICL03333	Improved Marketing and Competitiveness for Michigan Fruit Industries	Ricks, D.
MICL03356	Economics of Vertical Coordination and Intensive Production in Michigan's Livestock Industries	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	Research on International Agricultural Development and the Environment	Weber, M.
MICL08201	Enhancing Rural Economies Through Comprehensive Extension, Research and Partnering Approaches	Moser, C.
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	AREA OF 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
Brook, Roger C.	12	0.25	0.75	0.00	Postharvest Engineering/Food Safety
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.	13	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
Person, Howard L.	13	0.30	0.70	0.00	Swine Housing/Manure Management/Social Issues
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
von Bernuth, Robert D.	12	0.36	0.26	0.38	Manure Management/Irrigation
TOTALS:		5.65	3.96	5.39	

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.
MICL01676*	Technology and Principles for Assessing and Retaining Postharvest Quality of Fruits and Vegetables	Guyer, D.
MICL01777	Engineering For Vegetable Storage Design and Management	Brook, R.
MICL01787	Improvement of Small-Scale Decentralized and Onsite Wastewater Treatment and Disposal	Loudon, T.
MICL01794	Analysis and Characterization of Biosystems	Gerrish, J.
MICL01799	Designing Dairy Facilities to Enhance Management and to Meet Animals' Needs	Bickert, W.
MICL01862	Neutral-To-Earth Voltage Reduction on Livestock Farms	Surbrook, T.
MICL01883	Facilitating Beneficial Use of Livestock Manure	Person, H.
MICL01888*	Animal Manure and Waste Utilization, Treatment, and Nuisance Avoidance for a Sustainable Agriculture	von Bernuth, R.
MICL01914	Irrigation and Waste Management Research in a Systems Context	von Bernuth, R.
MICL01930	Computational Methods in Biosystems Engineering	Seeger, L.
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.
MICL07658	Achieving Lethality Performance Standards for Fully-Cooked Meat Products	Marks, B.
MICL07666	Biobased Technology	Srivastava, A.
MICL08238	Role of PA Technology in Biological and Environmental Monitoring of Potato IPM	Brook, R.

Agricultural Engineering (continued)

PROJECTS

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.



Animal Science

Phone: 355-8383



Maynard G. Hogberg,
Chair

FACULTY

	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
Allen, Michael	12	0.50	0.50	0.00	Forage Nutrition
Balander, Richard J.	13	0.40	0.00	0.60	Avian Physiology/Reproduction
Banks, Bobby D.	12	0.25	0.00	0.75	Animal Genetics
Bates, Ronald O.	14	0.20	0.80	0.00	Swine Genetics/Management
Beede, David ⁵	12	0.50	0.40	0.10	Dairy Nutrition/Dairy Management
Benson, Margaret	12	0.20	0.50	0.30	Ruminant Nutrition/Sheep
Bucholtz, Herbert F.	12	0.15	0.70	0.15	Dairy Nutrition/Management
Bursian, Steven	12	0.85	0.00	0.15	Avian Physiology/Toxicology
Burton, Jeanne L.	14	0.80	0.00	0.20	Molecular Genetics/Dairy Cattle
Buskirk, Daniel	14	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.	13	0.80	0.00	0.20	Molecular Biology
Doumit, Matthew E.	14	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	0.50	0.20	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.	14	0.60	0.00	0.40	Equine Exercise Physiology
Orth, Michael	14	0.80	0.00	0.20	Turkey Nutrition/Growth Biology
Osburn, Wesley N.	14	0.25	0.00	0.75	Meat Science
Pursley, James R.	14	0.20	0.80	0.00	Reproductive Management
Ritchie, Harlan D.	12	0.10	0.90	0.00	Beef Cattle Nutrition/Management
Roberson, Kevin D.	14	0.35	0.65	0.00	Poultry Nutrition/Management
Rozeboom, Dale	13	0.15	0.60	0.25	Swine Nutrition/Management
Rust, Steven	12	0.50	0.50	0.00	Beef Feedlot Nutrition
Ryser, Elliott T.	14	0.17	0.00	0.83	Dairy Manufacturing/Microbiology

Animal Science (continued)

Smith, George W.	14	0.75	0.00	0.25	Reproductive Physiology
Tempelman, Robert	13	0.50	0.00	0.50	Statistics
Trottier, Nathalie	14	0.75	0.00	0.25	Swine Nutrition/Management
VandeHaar, Michael	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	14	0.75	0.00	0.25	Ethology/Stress Physiology
TOTALS:		17.07	8.15	9.78	

PROJECTS

MICL01156*	Management Systems for Improved Decision Making and Profitability of Dairy Herds	Beede, D.
MICL01182*	Molecular Mechanisms Regulating Skeletal Muscle Growth and Differentiation	Doumit, M.
MICL01196*	Methods to Increase Reproductive Efficiency in Cattle	Pursley, J.
MICL01521*	Metabolic Relationships in Supply of Nutrients for Lactating Cows	VandeHaar, 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, and Livestock Waste	Yokoyama, M.
MICL01652*	Environmental and Economic Impacts of Nutrient Management on Dairy Forage Systems	Allen, M.
MICL01691*	Genetic Improvement of Cattle Using Molecular Genetic Information	Burton, J.
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	Advanced Biometrical Techniques for Genetic Inference in Livestock Populations	Tempelman, R.
MICL01823	Methods to Enhance Decision Making by Dairy Producers and Bull Studs	Ferris, T.
MICL01836	Genetic Basis of Parturition-Induced Immunosuppression and Mastitis Susceptibility in Dairy Cows	Burton, J.
MICL01852	Understanding Growth Plate Cartilage Turnover in Meat Producing Birds	Orth, M.
MICL01853	Assessment of Behavioral and Physiological Responses of Animals to Difficult Situations	Zanella, A.
MICL01854	Optimizing Protein and Amino Acid Utilization of Growing Pigs and Gestating and Lactating Sows	Trottier, N.
MICL01861	Management of Athletic Horses to Reduce Musculoskeletal Injuries and Improve Performance	Nielsen, B.
MICL01873*	Positional and Functional Identification of Economically Important Genes in the Pig	Ernst, C.
MICL01875	Using Milk Yield to Schedule Insemination in Dairy Cows	Fogwell, R.
MICL01877	Genetic Management and Control of Growth Carcass Merit and Quality	Bates, R.
MICL01879	Pre- and Postharvest Processing Strategies to Improve the Value of Muscle Food Products	Osburn, W.
MICL01880	Regulation of Skeletal Muscle Growth and Meat Quality	Doumit, M.
MICL01885*	Integration of Quantitative and Molecular Technologies for Genetic Improvement of Pigs	Bates, R.
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.

Animal Science (continued)

PROJECTS

MICL01929	Identification and Evaluation of Genes Controlling Economically Important Traits in Pigs and Cattle	Ernst, C.
MICL01931	Molecular Mechanisms of Animal Disease I: PRRSV	Coussens, P.
MICL01943	Nutritional and Managerial Strategies to Minimize Phosphorus Excretion from Poultry	Roberson, K.
MICL01946*	Porcine Reproductive and Respiratory Syndrome (PRRS): Mechanisms of Disease and Methods for Detection, Protection and Elimination of the PRRS Virus	Coussens, P.
MICL01952	Increasing Efficiency of Milk Production in Dairy Cattle	Weber-Nielsen, M.
MICL01961	Factors That Limit Reproductive Success of Dairy Cattle	Pursley, J.
MICL01974*	Water Quality Issues in Poultry Production and Processing	Roberson, K.
MICL03340	Nutrition and Feeding Management for Michigan Dairy Herds	Bucholtz, H.
MICL03360	Feeding and Management Regimes for Efficient Utilization of Michigan Feedstuffs 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.
MICL06889	Identification of PCR-RFLPS in Glucocorticoid Receptor Genes of Pedigreed Cattle	Burton, J.
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.
MICL06898	Identification of Differentially Expressed Genes Regulated by Zinc Supplementation of Weaned Pigs	Ernst, C.
MICL06900	Effect of Negative Energy Balance on Neutrophil Migration into the Mammary Gland of Cattle	VandeHaar, M.
MICL06901	Dynamics of Immune Responses to Johne's Disease in Infected and Vaccinated Calves	Coussens, P.
MICL07647	Great Lakes Region Hazard Analysis Critical Control Point Assistance Team	Osburn, W.
MICL08211	Role of Matrix Metalloproteinases in Ovulation	Smith, G.
MICL08229	Identification of Single-Nucleotide Polymorphisms in Pig Sequence-Tagged Sites	Ernst, C.
MICL08236	Inhibin Regulation of Intrafollicular Estradiol Production	Ireland, J.
MICL08257	Leptin Regulation of Bovine Mammary Cell Proliferation	VandeHaar, M.
MICL08262	Intrafollicular Role of Alpha-2-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.
MICL08274	Enhancing Management and Profitability on Small and Mid-Sized Dairy Farms	Pursley, J.

ANR Education & Communication Systems

Phone: 355-6580



Kirk L. Heinze, Chair

FACULTY

	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
Suvedi, Murari	13	0.25	0.50	0.25	Program Evaluation
Whims, Fred R.	12	0.12	0.47	0.41	Extension Education/Rural Education
Woods, Michael D.	14	0.25	0.00	0.75	Agriculture Communications
TOTALS:		0.62	0.97	1.41	

PROJECTS

MICL03372	Evaluation of Area of Expertise (AOE) Team Approach to Applied Research and Extension in Michigan	Suvedi, M.
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Biochemistry & Molecular Biology

Phone: 353-0804



William L. Smith, Chair

FACULTY

	RANK	MAES	MSUE	JOINT	AREA OF 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	13	0.25	0.00	0.75	Nutritional Genomics
Fraker, Pamela J.	12	0.30	0.00	0.70	Immunology
Gage, Douglas A.	13	0.56	0.00	0.44	Plant Biochemistry
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
TOTALS:		5.55	0.00	10.45	

PROJECTS

MICL01290*	Regulation of Photosynthetic Processes	Preiss, J.
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.
MICL01614	Interaction of <i>Rhizobium</i> with Soybean Cells	Wang, J.
MICL01754	Characterization of the Gap Junction Protein in Health and Disease	Watson, J.
MICL01781	Development of Starch-Based Microcellular Foamed Bioplastics	Schindler, M.
MICL01816	Biosynthesis of the Plant Osmoprotectant Dimethylsulfoniopropionate (DMSP)	Gage, D.
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.
MICL07662	Bioprocessing for Utilization of Agricultural Raw Materials	Zeikus, J.
MICL08225	Genetic Engineering of Amylosaccharidases for Agricultural Bioprocessing	Zeikus, J.
MICL08248	Increasing the Vitamin E Content of Vegetable Oils	Della Penna, D.
MICL08253	Function of Glucose-6-Phosphate Dehydrogenase in Developing Oil Seeds	Benning, C.

Chemical Engineering

Phone: 355-5135

PROJECTS

MICL08215 Condensed-Phase Catalytic Hydrogenation of Crop-Derived Organic Acids Miller, D.

Chemistry

Phone: 355-9715

PROJECTS

MICL08208 Environmentally Compatible Synthesis of Value-Added Chemicals from D-Glucose Frost, J.

MICL08258 Diamond Microelectrode Arrays: New Materials for the Electrochemical Detection of Aqueous Analytes Swain, G.

Crop & Soil Sciences

Phone: 355-0271



Douglas D. Buhler, Chair

FACULTY

	RANK	MAES	MSUE	JOINT	AREA OF 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	0.25	0.00	0.75	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
Foster, Eunice F.	12	0.15	0.00	0.85	Crop Physiology
Frank, Kevin W.	14	0.40	0.60	0.00	Turfgrass Management
Freed, Russell D.	12	0.50	0.00	0.50	International Agronomy/Plant Breeding
Harwood, Richard R. ²	12	0.60	0.20	0.20	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	0.75	0.00	0.25	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. ³	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	0.80	0.00	0.20	Crop/Weed/Physiology
Renner, Karen A.	12	0.50	0.50	0.00	Weed Science
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

Crop & Soil Sciences (continued)

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
Teppen, Brian J.	14	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
TOTALS:		16.24	5.25	10.51	

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.
MICL01685	Crop Rotation Effects on Soil Microbial Activity, Nutrient Use Efficiency and Productivity	Harwood, R.
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.)	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	Nitrogen Loss 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.

Crop & Soil Sciences (continued)

PROJECTS

MICL01990	Nitrogen Use and Fate in Turfgrass	Frank, K.
MICL03122	Development and Correlation of Soil Test Procedures with Crop Yields and Plant Nutrient Contents	Warncke, D.
MICL03260	Forage Management Studies in Northern Michigan	Leep, R.
MICL03302	Management of Organic Soils for Crop Production	Warncke, D.
MICL03324	Drought Resistance in Common Bean	Foster, E.
MICL07620	Sustainable Agriculture: Management Systems for Integrating Soil, Plants and Animals	Harwood, R.
MICL07640	Sustainable Agriculture: Ecological Integration of Soil, Plants and Animals	Harwood, R.
MICL07649	Improving the Sustainable Production of Speciality Crops	Kelly, J.
MICL07653	Sustainable Agriculture: Ecological Integration of Soil, Plants and Animals	Harwood, R.
MICL07661	Sustainable Agriculture: Ecologically-Based Farming Systems	Harwood, R.
MICL07663	Improving the Sustainable Production of Specialty Crops	Kelly, J.
MICL07669	Improved Production and Utilization Technology Through Variety Development	Douches, D.
MICL08194	Root and Soil Carbon Contributions to the Stability and Function of Soil Aggregates	Smucker, A.
MICL08220	Pesticide-Clay Mineral Interactions in Aqueous Systems	Boyd, S.
MICL08224	Mechanism of CBF Gene Regulation by Low Temperature	Thomashow, M.
MICL08234	Improved Production and Utilization Technology Through Variety Development	Douches, D.
MICL08244	An Integrated Assessment of the Bioavailability of Soil-Sorbed Pesticides	Boyd, S.

Entomology

Phone: 355-4663



Edward J. Grafius, Chair

FACULTY

		RANK	MAES	MSUE	JOINT	AREA OF INTEREST
Ayers, George S.	12	0.25	0.00	0.75		IPM/Apiculture & Pollination
Bird, George W.	12	0.23	0.62	0.15		Agricultural Nematology/Ecology
Bristow, Catherine	13	0.30	0.00	0.70		Ecology of Social Insects
DiFonzo, Christina D.	14	0.10	0.25	0.65		Field Crop Entomology/Pesticide Education Coordinator
Dong, Ke	14	0.25	0.00	0.75		Insect Toxicology & Neurobiology
Gage, Stuart H.	12	0.48	0.12	0.40		Computational Ecology, Bioinformatics
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		Plant-Nematode Interaction Physiology
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
Raikhel, Alexander S.	12	0.30	0.00	0.70		Insect Physiology
Scriber, J. Mark	12	0.50	0.00	0.50		Insect Ecology
Smitley, David R.	12	0.25	0.60	0.15		Landscape/Turf/Greenhouse Insect Management

Entomology (continued)

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
TOTALS:		8.16	4.81	10.03	

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	Landis, D.
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.
MICL01742	Molecular Basis of Insect Reproduction	Raikhel, A.
MICL01745	The A. J. Cook Arthropod Research Collection	Stehr, F.
MICL01783	Influence of Agricultural Landscape Structure on Biological Control of Pests by Insects	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	Factors Regulating Insect Host-Plant Colonization	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.
MICL01984*	Soybean Aphid: A New Pest of Soybean Production	DiFonzo, C.
MICL01986	Tree Fruit IPM/ICM and Pesticide Regulatory Policy in Michigan	Whalon, M.
MICL03338	Ecology and Management of Arthropod Vector Populations and Vector-Borne Diseases	Walker, E.
MICL03361	Biology and Control of Biting Flies in Michigan	Merritt, R.
MICL03365	Biology and Management of Insects in Michigan Field Crops	DiFonzo, C.
MICL03379	New Arthropod Pest Controls and Management Strategies for Michigan Tree Fruit Production Systems	Gut, L.
MICL07629	Minor Use Animal Drug Program: Headquarters	Hollingworth, R.
MICL07633	Management of the North Central Region Pesticide Impact Assessment Program (NCPIAP) for FY99	Olsen, L.
MICL07635	NC Region IR-4 Leader Lab Program to Clear Pest Control Agents for Minor Uses	Hollingworth, R.
MICL07641	Safeguarding the Supply of Speciality Crops for the Consumer	Gut, L.
MICL07643	Insecticide Mitigation Strategies for the High Risk High Value Michigan Blueberry Crop	Isaacs, R.
MICL07651	Safeguarding the Supply of Speciality Crops for the Consumer	Gut, L.
MICL07659	NC Region IR-4 Leader Lab Program to Clear Pest Control Agents for Minor Uses	Hollingworth, R.

Entomology (continued)

PROJECTS

MICL07667	Safeguarding the Supply of Speciality Crops for the Consumer	Gut, L.
MICL08192	Influence of Perennial Habitats Including High-Value Woody Species on Natural Enemies of Crop Pests	Landis, D.
MICL08223	Mode of Action of <i>Nosema apis</i> , a Microsporidian Pathogen of Honey Bees	Huang, Z.
MICL08226	Can Refuges Moderate Disturbance and Enhance Biological Control in Annual Crops?	Landis, D.
MICL08237	Protecting High Value Apple, Cherry and Blueberry Fruit from Key Rhagoletis Species	Liburd, O.
MICL08242	Establishment of a Transitional 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 Rotations Failure to Manage Western Corn Rootworm?	Landis, D.



Photo courtesy USDA Online Photography Center

Family & Child Ecology

Phone: 355-7680



Anne K. Soderman,
Acting Chair

FACULTY

	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
Imig, David R.	12	0.25	0.00	0.75	Family Ecology
Keefe, Dennis R.	14	0.50	0.00	0.50	Family Economics
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
Walker, Rosemary A.	12	0.50	0.00	0.50	Family Economics
TOTALS:		1.63	0.80	2.57	

PROJECTS

MICL01786	Determinants of Small Family Business Outcomes	Walker, R.
MICL01841	Identification and Evaluation of Internal and External Assets in the Lives of Children and Adolescents	Keith, J.
MICL01897*	Rural Low-Income Families: Tracking Their Well-Being and Functioning in the Context of Welfare Reform	Keefe, 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.
MICL03349	The Study of Family Social Capital in Rural Michigan Communities	Imig, D.
MICL03368	Family-Environment Transactions: Effects on Economic Well-Being and Michigan Families' Life Quality	Keefe, D.

Fisheries & Wildlife

Phone: 355-4478



Thomas G. Coon,
Acting Chair

FACULTY

	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
Bence, James R. ⁶	13	0.75	0.20	0.05	Fish Population Dynamics/Fish Ecology
Bremigan, Mary T. ⁶	14	0.60	0.00	0.40	Fish Management
Campa, Henry III	13	0.50	0.00	0.50	Wildlife Habitat Ecology
Coon, Thomas G.	13	0.20	0.00	0.80	Fish Ecology/Stream Management
Garling, Donald L.	12	0.30	0.50	0.20	Aquaculture
Hayes, Daniel B. ⁶	13	0.75	0.20	0.05	Stream Fisheries Biology
Jones, Michael L. ⁶	13	0.75	0.20	0.05	Fisheries Stream Models
Li, Weiming ⁶	14	0.75	0.20	0.05	Fish Physiology
Liu, Jianguo ⁶	13	0.75	0.20	0.05	Wildlife Systems Models
Lupi, Frank ⁶	14	0.10	0.28	0.62	Natural Resource Economics
Maurer, Brian A. ⁶	13	0.50	0.20	0.30	Landscape Ecology
Millenbah, Kelly F.	13	0.50	0.00	0.50	Restoration Ecology
Peacor, Scott D.	14	0.25	0.25	0.50	Aquatic Ecological/Ecosystem Modeler
Peyton, R. Benny	12	0.42	0.00	0.58	Human Dimensions
Prince, Harold H.	12	0.55	0.00	0.45	Waterfowl/Wetlands
Riley, Shawn J.	14	0.30	0.50	0.20	Wildlife Ecologist
Scribner, Kim T. ⁶	13	0.75	0.20	0.05	Molecular Ecology
Soranno, Patricia A.	14	0.50	0.00	0.50	Limnology
Winterstein, Scott R.	12	0.50	0.00	0.50	Wildlife Biometry
TOTALS:		9.72	2.93	6.35	
<i>Adjustment for PERM Positions</i>		<i>-5.70</i>	<i>-1.68</i>	<i>-1.62</i>	
ADJUSTED TOTALS		4.02	1.25	4.73	

PROJECTS

MICL01540	Ecology, Population Dynamics and Management of Michigan Great Lakes Fisheries Resources	Taylor, W.
MICL01646	Wildlife Responses to Habitat Management	Campa, H.
MICL01719	Management of Forests and Wildlife for Multiple Use Benefits	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	Systems Modeling of Wildlife Dynamics Across Heterogeneous Landscapes	Liu, J.
MICL01868	The Influence of Landscapes and Biological Communities 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	Classification of Aquatic Ecosystems for Management Across Ecological Gradients	Bremigan, M.
MICL01923	Habitat and its Effects on the Ecology and Management of Fishes	Coon, T.
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.
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.
MICL06891	Predictive Genealogical Model for Transmission of Tuberculosis in Free-Ranging Michigan Deer	Scribner, K.
MICL08256	Information Exchange, Citizen Water Monitoring and Agricultural Best Management Practices	Habron, G.
MICL09006	Regional Aquaculture Center	Batterson, T.
MICL10009	Regional Aquaculture Center	Batterson, T.
MICL10010	Regional Aquaculture Center	Batterson, T.
MICL10011	Regional Aquaculture Center	Batterson, T.
MICL10012	Regional Aquaculture Center	Batterson, T.
MICL10013	Regional Aquaculture Center	Batterson, T.



Food Science & Human Nutrition

Phone: 355-8474



Mark A. Uebersax,
Chair

FACULTY

	RANK	MAES	MSUE	JOINT	AREA OF 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.	14	0.25	0.75	0.00	Food Safety
Cash, Jerry N.	12	0.25	0.75	0.00	Fruit/Vegetable Products
Chenoweth, Wanda L.	12	0.25	0.00	0.75	Clinical Nutrition
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.	14	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
Hoerr, Sharon M.	12	0.40	0.00	0.60	Community Nutrition
Hord, Norman G.	14	0.25	0.00	0.75	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
Osburn, Wesley N.	14	0.15	0.00	0.85	Meat/Poultry Production
Pestka, James J.	12	0.62	0.00	0.38	Food Microbiology/Immunology
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
Schroeder, Joseph J.	14	0.50	0.00	0.50	Nutritional Biochemistry; Bioactive Lipids

Food Science & Human Nutrition (continued)

FACULTY

Song, Won O.	12	0.23	0.00	0.77	Nutritional Assessment
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.	12	0.08	0.00	0.92	Nutritional Genomics
Zile, Maija H.	12	0.50	0.00	0.50	Nutritional Biochemistry
TOTALS:		9.72	2.75	13.53	

PROJECTS

MICL01323	Improving Process Efficiency, Product Quality, and Nutrient Composition of Fruit and Vegetable Products	Uebersax, M.
MICL01413	Metabolism and Function of Vitamin A	Zile, M.
MICL01444*	Role of N-3/N-6 Polyunsaturated Fatty Acids in Health Maintenance	Romsos, D.
MICL01448	Microbial Food-borne 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	Development, Quality and Safety of Value-Added Dairy and Dairy-Based Products	Ustunol, Z.
MICL01665	Nutritional Assessment in Population-Based Epidemiological Studies	Song, W.
MICL01694*	Nutrient Bioavailability: A Key to Human Nutrition	Bennink, M.
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.
MICL01715*	Improve Food Safety Through Discovery and Control of Natural and Induced Toxicants and Antitoxicants	Pestka, J.
MICL01762	Relationship of Diet and Cancer	Bennink, M.
MICL01791	Processing and Quality Evaluation of Fruits and Vegetables	Cash, J.
MICL01795	Modulation of Colon and Breast Cancer Cell Growth by Sphingolipids	Schroeder, J.
MICL01804*	Using Stages of Change Model to Promote Consumption of Grains, Vegetables and Fruits by Young Adults	Hoerr, S.
MICL01856	Aflatoxin B1 Biosynthesis in <i>Aspergillus</i>	Linz, J.
MICL01878	Reducing Dietary Risk for Chronic Disease via a Behavioral Approach in High Risk Populations	Hoerr, S.
MICL01895	Influence of Diet and Phytochemicals on Colon Carcinogenesis	Bourquin, L.
MICL01902	Interactions of Minerals with Other Dietary Components: Effect on Bioavailability	Chenoweth, W.
MICL01920*	Marketing and Delivery of Quality Cereals and Oilseeds	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	Linz, J.
MICL01981	Enhancing Economic and Nutritional Value of Plant Products Through Food Processing Technology	Dolan, K.
MICL03363	Food Industry Institute	Hegarty, P.
MICL06885	Apoptosis and Sphingolipids in Fumonisin-Induced Kidney Cell Death	Schroeder, J.
MICL07644	A Time-Temperature Integrator to Validate Salmonella Destruction in Beef Patties	Orta-Ramirez, A.
MICL08195	Biochemical Characterization of Pale, Soft, Exudative Turkey	Strasburg, G.
MICL08239	Function of Vitamin A in Quail Embryogenesis	Zile, M.



Daniel E. Keathley,
Chair

FACULTY

	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
Dickmann, Donald I.	12	0.55	0.00	0.45	Fire Ecology, Silviculture
Epperson, Bryan K.	13	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	13	0.70	0.00	0.30	Wood Science
Kielbaso, Julian J.	12	0.15	0.25	0.60	Urban Forestry
Kobe, Richard K.	14	0.70	0.00	0.30	Forest Ecology
Leefers, Larry A.	13	0.50	0.00	0.50	Forest Economics
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. ⁶	14	0.75	0.20	0.05	Forest Ecology
Yin, Runsheng	14	0.70	0.00	0.30	Forest Economics
TOTALS:		7.25	1.60	5.15	
<i>Adjustment for PERM Positions</i>		<i>-0.75</i>	<i>-0.20</i>	<i>-0.05</i>	
ADJUSTED TOTALS		6.50	1.40	5.10	

PROJECTS

MICL01693*	The National Atmospheric Deposition Program (NADP)	Kobe, R.
MICL01748	Economic Analysis of Forest Management Opportunities in Michigan	Potter-Witter, K.
MICL01774	Managing the Genetic Diversity of Michigan Pines	Epperson, B.
MICL01805	Bioremediation of Condensate Produced During Conditioning of Veneer Logs	Kamdern, D.
MICL01811	Incorporating Risk, Natural Resources Accounting and Hedonic Valuation in Forestry Decisions	Leefers, L.
MICL01812	Municipal Tree Management	Kielbaso, J.
MICL01845	Long-Term Diameter, Basal Area and Ordered Categorical Responses of Oak and Hardwood Forests	Hart, J.
MICL01871	Modeling Landscape-Level Variation in Forest Community Dynamics	Kobe, R.
MICL01899	Justice in Public Participation and Natural Resource Decision Making	McDonough, M.
MICL01944	Assessment of the Effects of Prescribed Burning on the Flora and Fauna of Mature Pine Communities	Dickmann, D.
MICL01970*	Integrating Biophysical Functions of Riparian Systems with Management Practices and Policies	Walters, M.
MICL01996	A Study of Producer Performance and Products Markets of Michigan's Forest Products Industry	Yin, R.
MICL07623	Advanced Technology Applications to Eastern Hardwood Utilization	Kamdern, D.
MICL07631	Advanced Technology Applications to Eastern Hardwood Utilization	Kamdern, D.
MICL07639	Advanced Technology Application to Eastern Hardwood Utilization	Kamdern, D.
MICL07650	Advanced Technology Applications to Eastern Hardwood Utilization	Kamdern, D.
MICL07668	Advanced Technology Applications to Eastern Hardwood Utilization	Kamdern, D.
MICL08249	Genomics of Heartwood Formation	Han, K.

Geography

Phone: 355-4649



Richard E. Groop, Chair

FACULTY

	RANK	MAES	MSUE	JOINT	AREA OF 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
TOTALS:		0.43	0.00	1.57	

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 Perry, Acting Chair

FACULTY

	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
Beaudry, Randolph M.	12	0.50	0.50	0.00	Postharvest Fruit Physiology
Behe, Bridget K.	13	0.25	0.00	0.75	Horticulture Marketing
Biernbaum, John A.	12	0.20	0.00	0.80	Plant Physiology/Floriculture
Cameron, Arthur C.	12	0.70	0.00	0.30	Plant Physiology/Landscape Horticulture
Carlson, William H.	12	0.25	0.65	0.10	Floriculture/Physiology & Bedding
Cregg, Bert M.	14	0.50	0.25	0.25	Plant Physiology/Woody Ornamentals
Dilley, David R.	12	0.80	0.00	0.20	Postharvest Physiology/Pomology
Fernandez, Rodney	14	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	0.90	0.00	0.10	Vegetable Breeding/Genetics
Hancock, James F.	12	0.90	0.00	0.10	Small Fruit Breeding/Genetics
Hanson, Eric J.	12	0.35	0.65	0.00	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
Lownds, Norman K.	14	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	0.50	0.50	0.00	Vegetable Horticulturalist
Perry, Ronald L.	12	0.50	0.50	0.00	Pomology/Rootstocks
Rowe, D. Bradley	14	0.25	0.00	0.75	Landscape Horticulture
Runkle, Eric S.	14	0.50	0.00	0.50	Floriculture
Schemske, Douglas W.	12	0.10	0.00	0.90	Plant Adaptation and 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
van Nocker, Steven R.	14	0.75	0.00	0.25	Reproductive Development/Genetics
Zabadal, Thomas J.	13	0.50	0.50	0.00	Viticulture
Zandstra, Bernard H.	12	0.25	0.75	0.00	Vegetable Crops
TOTALS:		15.65	5.30	9.05	

PROJECTS

MICL01155*	Postharvest Physiology of Fruits	Dilley, D.
MICL01222*	Plant Germplasm and Information Management and Utilization	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	Biologically Active Natural Products and Value-Added Products from Plants and Microbes for Agricultural and Pharmaceutical Use	Nair, M.
MICL01684	Modified Atmosphere Packaging of Horticultural Produce	Cameron, A.
MICL01697*	Decision Support for Design and Control of Plant Growth Systems	Heins, R.
MICL01731	Genetic and Biotechnology Studies for Selected Horticultural Crops	Sink, K.
MICL01753	Application of Molecular Genetic Approaches to Vegetable Crop Improvement	Grumet, R.
MICL01778	Environmental and Physiological Variables Effect on Growth, Quality, and Marketability of Garden Crop	Carlson, W.
MICL01810	Genetic Improvement of Strawberries and Blueberries	Hancock, J.
MICL01824	Physiological and Environmental Factors Influencing Growth and Development of Flower Crops	Heins, R.
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.

Horticulture (continued)

PROJECTS

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.
MICL03218	Achieving Sustainable Grapevine Yields, Maximum Processed Quality, Resistance to Environmental Stress	Howell, G.
MICL03305	Vineyard Mechanization in Michigan Vineyards	Zabada, 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.
MICL07632	Safeguarding the Supply of Specialty Crops for Consumers	Hanson, E.
MICL07654	Bioprocessing for Utilization of Agricultural Raw Materials	Nair, M.
MICL08250	Cultural and Biological Alternatives to Methyl Bromide Fumigation of Strawberries	Hancock, J.
MICL09010	Epigenetic Mechanisms and Changes in Gene Expression Associated with Flowering Horticulture	van Nocker, S.

Human Environment & Design

Phone: 355-7712



Sally Helvenston,
Acting Chair

FACULTY

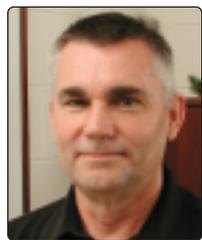
	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
Pysarchik, Dawn I.	13	0.31	0.00	0.69	Merchandising Management
Slocum, Ann C.	13	0.25	0.00	0.75	Apparel Design & Textiles
Sontag, M. Suzanne	12	0.25	0.00	0.75	Apparel Design & Textiles
Sternquist, Brenda J.	12	0.25	0.00	0.75	Merchandising Management
TOTALS:		1.06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

PROJECTS

MICL01442*	Occupational Safety and Health Through the Use of Protective Clothing	Slocum, A.
MICL01775	Processed Food Industries in India: Market Evolution	Pysarchik, D.
MICL01833	Emerging Free Markets: The Role of Federal vs. Municipal Approved Retail Joint Ventures	Sternquist, B.
MICL03357	Needs of the Michigan Textile/Apparel Industry: Characterization, Assessment and Response Strategies	Sontag, M.

Integrated Plant Systems (Center for)

Phone: 353-9430



L. Pat Hart, Acting Chair

FACULTY

	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
DiFonzo, Christina D.	14	0.10	0.40	0.50	Field Crop Entomology/Pesticide Education Coordinator
TOTALS:		0.10	0.40	0.50	

PROJECTS

MICL07665	An Integrated Pest Management Facilitator for the North Central Region FY-2001	Olsen, L.
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Julian Samora Research Institute

Phone: 432-1317

PROJECTS

MICL08210 Latinos in the Rural Midwest: Community Development Implications

Millard, A.

Large Animal Clinical Sciences

Phone: 355-9593



Frederik J. Derksen,
Chair

FACULTY

	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
Baker, John C.	12	0.20	0.00	0.80	Bovine Respiratory Diseases
Erskine, Ronald J.	12	0.25	0.33	0.42	Dairy Cattle Mastitis
Grooms, Daniel L.	14	0.50	0.50	0.00	Beef Disease Management
Herd, Thomas H.	12	0.25	0.00	0.75	Cattle Nutrition & Metabolic Diseases
Kaneene, John B.	12	0.14	0.00	0.86	Epidemiology/Disease Impact
Mansfield, Linda	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	0.40	0.40	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
TOTALS:		2.65	2.08	5.27	

PROJECTS

MICL01417*	Evolving Pathogens, Targeted Sequences, and Strategies for Control of Bovine Respiratory Disease	Baker, J.
MICL01688*	Mastitis Resistance to Enhance Dairy Food Safety	Erskine, R.
MICL01708	Reducing Economic Losses and Food Safety Risks Related to Mastitis	Erskine, R.
MICL01801	Total Quality Management for Disease Control on Swine Farms	Straw, B.
MICL01819	Nutritional Assessment of Animals and Animal Populations by Laboratory Means	Herd, 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.
MICL03354	Implementing Food Safety Through Total Quality Management on Michigan Dairy Farms	Sears, P.
MICL03355	Perinatal Lamb Mortality and Production Issues Associated with Pasture Lambing Systems in Michigan	Rook, J.
MICL06886	Mucus Secretion in Horse Airways	Robinson, N.
MICL06887	Characterization of a Novel Equine Cartilage Matrix Metalloprotease	Caron, J.
MICL06893	Purification of Bovine Anti-Coliform Antibodies for Passive Immunization Against Coliform Mastitis	Erskine, R.
MICL06895	Epidemiology and Mechanisms of Resistance to Fluoroquinolones in Selected Bovine Bacterial Isolates	Kaneene, J.
MICL06897	Development of a Novel Method for Investigation of Upper Gastrointestinal Function in Horses	Schott, H.
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.
MICL08227	Mucus Secretion and Clearability in Equine COPD	Robinson, N.
MICL08246	Antibiotic Usage and Risk Factors for Antimicrobial Resistance in Pork Production	Norby, B.

Microbiology & Molecular Genetics

Phone: 355-6463



Jerry B. Dodgson, Chair

FACULTY

	RANK	MAES	MSUE	JOINT	AREA OF 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
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.	14	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.	12	0.17	0.00	0.83	Nutritional Genomics
TOTALS:		3.99	0.00	8.01	

PROJECTS

MICL01154*	Enteric Diseases of Swine and Cattle: Prevention, Control and Food Safety	Maes, R.
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	Lignin Degradation by Basidiomycete Fungi and Applications	Reddy, C.
MICL01681	Molecular Basis of Symbiotic Plant-Microbe Interactions	de Bruijn, F.
MICL01728*	National Animal Genome Research Project	Dodgson, J.
MICL01757	Understanding the Distribution of Microbial Populations in Soils	Schmidt, T.
MICL01834	Molecular Mechanisms Involved in the Secretion of Pathogenicity Factors Through Bacterial Membranes	Bagdasarian, M.
MICL01857	Physiology and Phylogenetic Diversity of Termite Gut Symbionts	Breznak, J.
MICL01918	Enzymology of Alpha-Ketoglutarate-Dependent Dioxygenases	Hausinger, R.
MICL06890	Recombinant Vaccines for Enhanced Antiviral (Cellular) Immunity	Bagdasarian, M.
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.
MICL08217	Development of Heat-Labile Enterotoxin (LT) as Carrier of Foreign Antigen Epitopes	Bagdasarian, M.
MICL08218	<i>In vivo</i> Expressed Genes of <i>Actinobacillus pleuropneumoniae</i>	Mulks, M.
MICL08222	Role of Protein Phosphatase 2C in Lotus <i>Japonicus</i> Root Nodule Development	de Bruijn, F.
MICL08232	An Integrated BAC Map of the Chicken Genome	Dodgson, J.
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.



National Food Safety & Toxicology Center

Phone: 432-3100



Ewen Todd, Director

FACULTY

	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
Giesy, John P.	12	0.25	0.00	0.75	Aquatic Toxicology
TOTALS:		0.25	0.00	0.75	

PROJECTS

MICL01919	Fates and Effects of Potential Endocrine Modulating Compounds in the Environment	Giesy, J.
MICL01995	A Toxicogenomic Approach to Understanding Environmental Pollutants	LaPres, J.
MICL03364	Improved Microbial Food Safety Through Risk Assessment, Management, Communication and Analysis	Mather, E.
MICL08228	Anti-Oxidant, Anti-Inflammatory and Anti-Cancer Compounds from Tart Cherries	Nair, M.

Packaging (School of)

Phone: 355-9580



Bruce R. Harte, Director

FACULTY

	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
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
Hernandez, Ruben J.	13	0.25	0.00	0.75	Package Product Interaction
Lee, Julian J. L.	13	0.20	0.00	0.80	CAP/MAP & Protective Packaging
Singh, Sher Paul	12	0.20	0.00	0.80	Distribution/Transportation/Environmental Measuring/Packaging Dynamics
TOTALS:		1.35	0.00	3.65	

Packaging (continued)

PROJECTS

MICL01735	New Reusable Containers for the Fresh Produce and Meat Packaging	Singh, S.
MICL01736	Quality Retention in Packaged Food	Downes, T.
MICL01828	Improving the Quality of Products and Distribution Productivity Through Packaging Innovation	Twede, D.
MICL01831	Design of Plastic Packages for Preserving the Quality and Safety of Food Products	Hernandez, R.
MICL01921	Automatic Data Capture for Packaging Line Forces That Impact Operations	Clarke, R.

Park, Recreation & Tourism Resources

Phone: 353-5190



Joseph D. Fridgen, Chair

FACULTY

	RANK	MAES	MSUE	JOINT	AREA OF 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
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 Community Development/ Marketing Communications
TOTALS:		2.75	0.50	2.75	

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.
MICL03280	Travel, Tourism and Recreation Resource Center	Holecek, D.
MICL03362	Economic Impacts of Recreational Tourism	Stynes, D.
MICL09009	Corps of Engineers Marina User/Dock Owner Expenditure Study	Propst, D.

Pathobiology and Diagnostic Investigation

Phone: 432-4680



Willie Reed, Interim Chair

FACULTY

	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
Bell, Thomas G.	12	0.25	0.00	0.75	Comparative Pathology/Platelet Function
Bolin, Carole A.	12	0.22	0.00	0.78	Infectious Diseases of Livestock and Companion Animals
Bolin, Steven R.	12	0.22	0.00	0.78	Infectious Diseases of Livestock and 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
TOTALS:		1.80	0.00	5.20	

PROJECTS

MICL01720	Immunohistochemical Diagnosis of Infectious Diseases	Patterson, J.
MICL01776	Endotoxin/Ozone Co-Exposures and Airway Epithelial Remodeling	Harkema, J.
MICL01847	Osteochondrosis: Development of Procedures to Control or Mitigate the Effects of This Disease	Padgett, G.
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.
MICL06882	Hemorrhagic Disorder in Noncytopathic Type II Bovine Virus Diarrhea Viral Infection	Bell, T.
MICL06905	Characterization of a New Disease and a Novel Calicivirus Detected in Michigan Rabbits	Bolin, S.

Physiology

Phone: 355-6475



William S. Spielman, Chair

FACULTY

	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
Jump, Donald B.	12	0.50	0.00	0.50	Molecular Endocrinology
TOTALS:		0.50	0.00	0.50	

PROJECTS

MICL01892	Dietary Fat Regulation of Hepatic Gene Expression	Jump, D.
MICL08205	Dietary Fat Regulation of Hepatic Glycolytic Gene Expression	Jump, D.

Plant Biology

Phone: 355-4683



Frank Ewers, Acting Chair

FACULTY

	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
Adams, Gerard C.	13	0.20	0.00	0.80	Plant Pathology/Mycology
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
Poff, Ken	12	0.25	0.00	0.75	Plant Physiology
Prather, L. Alan	14	0.25	0.00	0.75	Plant Systematics
Sang, Tao	14	0.25	0.00	0.75	Plant Systematics & Molecular Evolution
Sears, Barbara B.	12	0.25	0.00	0.75	Molecular Biology & Plant Organelle Genetics
TOTALS:		3.54	0.00	6.46	

PROJECTS

MICL01533	Genetic Engineering of Oilseed Crops	Ohlrogge, J.
MICL01679	<i>Plastome mutator</i> of <i>Oenothera</i> : A Nuclear Gene That Causes Chloroplast DNA Mutations	Sears, B.
MICL01808	Recombination Between Viral RNA and Transgenic Plant Transcripts	Allison, R.
MICL01843	Cryptic Plant Pathogenic Fungi: Biology of Latent Pathogens in Symptomless Trees	Adams, G.
MICL01896	Phylogeny of the Rice Genus, <i>Oryza</i> , and Evolution of Rice Disease Resistance Genes	Sang, T.
MICL01907	Development and Dispersal of Inoculum for the Wheat Head Scab Fungus, <i>Gibberella zeae</i>	Trail, R.
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.
MICL08203	Factors Affecting Recombination Frequency Between Plant Viruses and Viral Transgenes	Allison, R.
MICL08212	Production of Industrially Useful Monoenoic Fatty Acids in Transgenic Plants	Ohlrogge, J.
MICL08216	Production of Acetylated Glycerides in Transgenic Oil Crops	Pollard, M.
MICL08240	Homologous Recombination in Plant Mitochondria	Sears, B.
MICL08251	Genetics of Zearalenone Biosynthesis and Grain Colonization by <i>Gibberella zeae</i>	Trail, F.
MICL08271	The Mechanism of Forcible Discharge of Ascospores in <i>Gibberella zeae</i>	Trail, F.
MICL08272	Regulation and Organization of the Plastid Pyruvate Dehydrogenase Complex	Thelen, J.

Plant Pathology

Phone: 353-8624



Ray Hammerschmidt,
Acting Chair

FACULTY

	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
Adams, Gerard C.	13	0.35	0.27	0.38	Plant Pathology/Mycology
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, and Nut Tree Disease
Hammerschmidt, Raymond	12	0.83	0.00	0.17	Plant Pathology/Biochemistry/Physiology/Plant Disease Resistance
Hart, L. Patrick	12	0.40	0.50	0.10	Plant Pathology/Field Crops
Hausbeck, Mary K.	13	0.29	0.61	0.10	Plant Pathology/Ornamentals, Vegetables & Greenhouse Crops
Jarosz, Andrew M.	13	0.30	0.00	0.70	Plant Pathology/Pathogen Epidemiology
Jones, Alan L.	12	0.50	0.40	0.10	Plant Pathology/Fruit Tree Crops
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
Trail, Frances	14	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
TOTALS:		5.91	3.17	3.92	

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	Control and Utilization of VA Mycorrhizal Root Colonization	Safir, G.
MICL01562	Physiology of Resistance and Induced Resistance to Disease in Potato	Hammerschmidt, R.
MICL01662	Avirulent Fungal and Bacterial Plant Pathogens: Their Role and Fate in Plant Disease Epidemics	Fulbright, D.
MICL01673	Biology and Control of Pathogens of Field Crops	Hart, L.
MICL01756*	Multidisciplinary Evaluation of New Apple Cultivars	Jones, A.
MICL01832	Management of Turfgrass Diseases	Vargas, L.
MICL01954	Epidemiology and Integrated Management of Small Fruit Diseases	Schilder, A.
MICL01962*	Eradication, Containment and/or Management of Plum Pox (Sharka Disease)	Jones, 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.
MICL03183	Diseases of Tree Fruit Crops and Their Control	Jones, A.
MICL03377	Diseases of Upland and Muck Vegetables and Transplants, Greenhouse Ornamentals, and Their Control	Hausbeck, M.
MICL07646	Controlling Fire Blight Disease of Apple Trees FY00	Jones, A.
MICL07656	Reducing Use of B2 Carcinogens in Michigan Carrots	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	Jones, A.
MICL08270	Seeking Alternatives to B2 Fungicides and Carbamate Insecticides for Asparagus Production	Hausbeck, M.

Plant Research Laboratory (MSU-DOE)

Phone: 353-2270



Kenneth Keegstra, Director

FACULTY

	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
He, Sheng-Yang	13	0.25	0.00	0.75	Plant Pathology
Howe, Gregg A.	14	0.23	0.00	0.77	Plant/Insect Defense
Walton, Jonathan D.	12	0.23	0.00	0.77	Plant Pathology
TOTALS:		0.71	0.00	2.29	

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.
MICL08197	Photoperiodic Control of Gibberellin Metabolism in Long-Day Rosette Plants	Zeevaart, J.
MICL08221	Effects of Engineered Plant Respiration on Growth/Yield and Low Temperature Response	McIntosh, L.
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.
MICL08254	Control of mRNA Stability in Dicotyledonous Plants	Green, P.

Political Science

Phone: 355-6590

PROJECTS

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

Phone: 353-5941

PROJECTS

MICL07645	Epidemiology and Risk Analysis of <i>Mycobacterium bovis</i> in Wild and Domestic Animals in Michigan	Kaneene, J.
MICL07664	Epidemiology and Risk Analysis of <i>Mycobacterium bovis</i> in Wild and Domestic Animals in Michigan	Kaneene, J.
MICL08235	Risk Factors for Salmonella and Campylobacter Infections and Drug Resistance in Dairy Cattle	Kaneene, J.

Remote Sensing (Center for)

Phone: 353-7195

PROJECTS

MICL01835	Applications of Spatial Information Technologies to Management of Agriculture and Natural Resources	Groop, R.
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Resource Development

Phone: 355-3421



Scott G. Witter, Acting Chair

FACULTY

	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
Beckwith, JoAnn	14	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
Dersch, Eckhart	12	0.25	0.50	0.25	Natural Resources Management
Kakela, Peter J.	12	0.70	0.00	0.30	Natural Resources Management
Kaplowitz, Michael C.	14	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
TOTALS:		3.53	0.95	5.52	

PROJECTS

MICL01536	Comparative Indicators for Rural Development, Environmental Planning and Public Policy Formulation	Schultink, G.
MICL01817	Watershed Management in the Rural/Urban Fringe	Witter, S.
MICL01851	Water Resource Protection at the Interface of the Hydrologic Cycle and Cultural Influences	Dersch, E.
MICL01859	Farm, Rural and Environmental Groups in Agricultural Research and Development Policy	Bingen, R.
MICL01860	Pesticide Policy Studies	Bingen, R.
MICL01870	Use of Impact Assessment in Policy Formulation	Bronstein, D.
MICL01968	Public Acceptance of Plant Biotechnology	Beckwith, J.
MICL01979	The Role of Economics and Law on Environmental Management	Kaplowitz, M.
MICL03352	Mineral Lands Development, Energy Requirements, and Environmental Impacts	Kakela, P.
MICL03358	Economic Issues of Latinos in Rural Settings and Their Impact on Michigan Agriculture	Rosenbaum, R.

Social Work (School of)

Phone: 353-8616



Gary R. Anderson, Director

FACULTY

	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
Seita, John R.	14	0.25	0.25	0.50	Youth Development
TOTALS:		0.25	0.25	0.50	

Sociology

Phone: 355-6632



Thomas L. Conner, Chair

FACULTY

	RANK	MAES	MSUE	JOINT	AREA OF 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
Johnson, Nan E.	12	0.50	0.00	0.50	Demography
Rudy, Alan P.	14	0.30	0.00	0.70	Sociology of Agriculture
TOTALS:		1.77	0.00	2.23	

PROJECTS

MICL01612	Strategic Analysis of Technical Change in Commodity Subsectors	Busch, L.
MICL01829*	Rural Restructuring: Causes and Consequences of Globalized Agricultural and Natural Resource Systems	Harris, C.
MICL01874	Social Processes in Disability and Death for Nonmetro Americans: A Longitudinal Study	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.

Water Research (Institute of)

Phone: 353-3744



Jon F. Bartholic, Director

PROJECTS

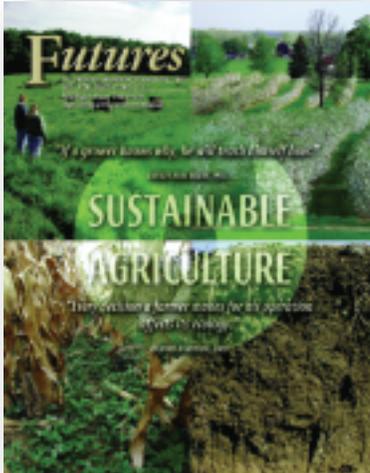
MICL01838	Development of a Knowledge-Based Decision-Support System for Integrated Landscape/Watershed Planning	Bartholic, J.
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Faculty Appointments

	MAES	MSUE	JOINT
GRAND TOTALS	135.12	46.84	143.04
¹ Elton Smith Endowed Chair			⁵ Clinton Meadows Chair
² C.S. Mott Distinguished Professor of Sustainable Agriculture			⁶ Partnerships for Ecosystem Research and Management (PERM) positions with salary funded by the Michigan Department of Natural Resources
³ Hannah Professor for Microbial Ecology and Plant Sciences			
⁴ Nowlin Professor for Water Research (50 percent of the appointment is paid by the endowment)			

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, 312 Agriculture Hall, MSU, East Lansing, MI 48824-1039, call 517-432-1555 or e-mail millsap@msu.edu. *Futures* is also available for viewing on the MAES Web site at <http://www.maes.msu.edu>.

Fall/Winter 2000/Spring/Summer/Fall 2001 Vol. 18 No. 3/Vol. 19 Nos. 1, 2, 3



The benefits that Michigan agriculture provides the entire state go beyond meeting the vital needs of food, feed and fiber. It provides livelihoods for farmers and communities, habitats for organisms ranging from microbes to large animals, and tremendous ecological services, such as water infiltration, for the surrounding environment.

This issue of *Futures* is dedicated to Richard Harwood, who brought his vision for sustainable agriculture to MSU when he accepted the C.S. Mott Foundation Chair of Sustainable Agriculture in 1990. The knowledge that Harwood has shared with others from his extensive national and international experience has inspired many of his colleagues to recognize the impact of their work on agriculture, the environment and society as a whole. MAES nematologist George Bird has worked with Harwood on several projects and referred to him as being “as irreplaceable as you can get.”

In this issue's first story, Harwood describes the importance of his work here at MSU and the importance of agroecology to all of us. His leadership in sustainable agriculture has led to greater understanding of the principles of agroecology and established a coalition of scientists, educators, producers and environmentalists that will continue his dream of a Michigan agriculture that is economically, environmentally and socially sustainable.

Agroecology rests on the foundation of biological principles. Research on integrated crop rotations is one of the many MAES projects studying alternative farming methods to improve soil quality while increasing its biological diversity. MAES scientists are comparing corn/corn/soybean/wheat rotations in four management systems ranging from conventional to organic at the Living Field Lab at the W.K. Kellogg Biological Station in Hickory Corners. Scientists are studying how these different systems affect crop production to provide farmers with sound methods that will improve their yields while minimally affecting the environment.

Integrated crop rotations are also used in research on cover crops, which can be used with almost every field crop. MAES scientists are implementing various cover crops into corn/corn/soybean/wheat rotations, as well as others, to study their effects. Research has shown that when the right cover

crops are incorporated at the right times, they can effectively recycle soil nutrients — especially nitrogen — suppress weeds and provide refuge areas for beneficial insects. They also increase soil diversity and help prevent erosion and runoff.

Whatever practice is used on the soil affects soil quality in some way. MAES research on nematodes (tiny roundworms) is discovering that nematode populations may be the best indicators of what is occurring above and below the soil surface. Nematodes are generally microscopic and live in soil. They are also the most numerous animals on earth and possibly the most sensitive — they readily react to their surrounding environment. MAES scientists are studying their crucial role as sensors in soil ecology.

Weed seeds are also abundant in the soil, but not every seed becomes a weed. MAES researchers Karen Renner, Doug Landis and Fabian Menalled are studying what happens to weed seeds, and they have found that many become food for beneficial insects. Their goal is to create a cropping system that can be incorporated into a producer's overall management scheme that promotes weed seed predation by these insects. Weed seed predation holds promise for controlling weeds in an ecological manner.

Agricultural sustainability also affects livestock managers and MAES scientists are studying managed intensive rotational grazing (MIRG) systems to provide producers with an effective, low-cost alternative to conventional confinement systems. Producers who use MIRG are graziers, or grass farmers, that skillfully manage their pastures to provide their livestock with fresh, high-quality feed throughout the grazing season.

MAES research on organic apple production — the first scientific organic research of its kind at MSU — is taking place on 5 acres at the Clarksville Horticultural Experiment Station in Clarksville. A multidisciplinary group of 24 people — researchers from the MAES, MSU Extension staff members, and select apple growers — are studying soil quality, pest management and marketing issues that affect organic apple production. The goal is to understand the dynamics of organic systems to find effective ecological farming methods applicable to all growers.

MAES scientists believe the best way to achieve a sustainable agriculture in Michigan is through the integrative, multi-disciplinary research they are conducting. Their work unites people across university departments and farms throughout the state.

Send comments about *Futures* to *Futures* Editor, 312 Agriculture Hall, East Lansing, MI 48824-1039, or send an email note to millsap@msu.edu.

MAES Contributors

July 1, 2000 to June 30, 2001

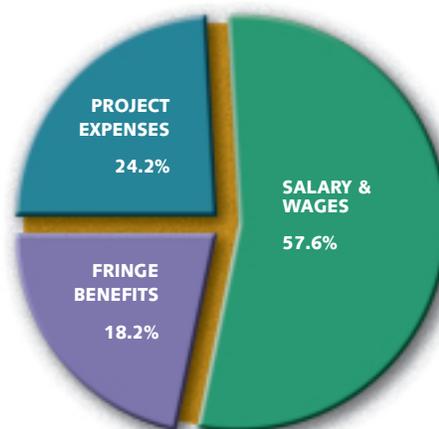
3M	Coca-Cola Company	Griffin, L.L.C.
3M Canada Company	Colorado State University	Gustafson LLC
Access Business Group LLC	Consortium for Plant Biotechnology Research, Inc.	Harris Moran Seed Company
AdjuVants Plus	Corn Marketing Program of Michigan	Heinz
Advanced Water Management, Inc.	Cornell University	Helena Chemical Company
AgraQuest, Inc.	Deschutes County Oregon	Henry Mast Greenhouses, Inc.
Agtrol International	Dow AgroSciences	Hewlett Packard Company
Allen Foundation, Inc.	Dow Chemical Company	Hummer Turfgrass Systems, Inc.
American Agricultural Economics Association Foundation	Ducks Unlimited, Inc.	Innovative Farmers of Michigan
American Chestnut Foundation	DuPont Crop Protection	International Crops Research Institute for the Semi-Arid Tropics
American Express Company	Eastman Kodak Company	International Dwarf Fruit Tree Association
American Floral Endowment	ECORISK, Inc.	International Food Policy Research Institute
AMVAC Chemical Corporation	EFX Systems, Inc.	International Life Sciences Institute Research Foundation
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Andersons, Inc.	Eisai Research Institute of Boston, Inc.	Iowa State University
Applied Carbochemicals, Inc.	Eka Chemicals, Inc.	J. DeVries Potplanten
Association for Dressing and Sauces	Elanco Animal Health	Johns Hopkins University
Aventis CropScience	Emerald BioAgriculture Corporation	Johnson Wax Professional
Ball Horticultural Company	Emmert's Blueberries, Inc.	JP BioRegulators, Inc.
BASF Corporation	Engelhard Corporation	JPPA AG Research USA, Inc.
Battlefield Farms, Inc.	Evenflo Company, Inc.	Kalamazoo Valley Plant Growers Co-op
Bayer Corporation	Farm Bureau Insurance	Kalsec, Inc.
Bejo Seeds, Inc.	Farnum Companies, Inc.	Kellogg Company
Bio-Cide International, Inc.	Federal Aviation Administration	Kellogg's Corporate Citizenship Fund
Bio-Rad Laboratories, Inc.	Federal Express	King Milling Company
BioSafe Systems, LLC	Fibre Box Association	Knappen Milling Company
Blasland Bouck & Lee, Inc.	Film Seed Institute of North America	Kraft Foods, Inc.
Bordine Nursery, Ltd.	FMC Corporation	Laketown Greenhouse
C. Raker & Sons, Inc.	Foundation for Agronomic Research, Inc.	Land O'Lakes, Inc.
California Tomato Research Institute, Inc.	Four Star Greenhouse, Inc.	Landscape Plant Development Center
Cargill, Inc.	Fred C. Gloeckner Foundation, Inc.	Lansmont Corporation
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Chelsea Milling Company	Glass Corner Greenhouses, Inc.	LESCO, Inc.
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Children's Hospital & Regional Medical Center	Gowan Company	Loveland Industries, Inc.
Chr. Hansen A/S	Grant Farms	M&M Mars
ChristenDETROIT	Great Lakes Fishery Commission	MannaTech Services
Cleary Chemical Corporation	Great Lakes Protection Fund	MBG Marketing
Clorox Company	Green & Grow, Inc.	

McDonough Braungart Design Chemistry, LLC	National Institutes of Health	Summerdale, Inc.
Mendel Biotechnology, Inc.	National Pork Producers Council	Sunlet Nursery, Inc.
Metropolitan Detroit Flower Growers' Association	National Science Foundation	Sybron Biochemical, Inc.
Michigan Agri-Business Association	National Starch and Chemical Company	Syngenta Crop Protection, Inc.
Michigan Agricultural Stewardship Association	National Turfgrass Federation, Inc.	Synthon Chiragenics Corporation
Michigan Apple Research Committee	Natural Industries, Inc.	Tanical Therapeutics, Inc.
Michigan Asparagus Advisory Board	Nature Conservancy	Tomen Agro, Inc.
Michigan Asparagus Research, Inc.	Neal Mast & Son Greenhouses, Inc.	UCB Chemicals Corporation
Michigan Bean Commission PRAB	Northern Quinoa Corporation	Ultra Turf Inc.
Michigan Biotechnology Institute International	NorthStar Select Sires Cooperative, Inc.	Uniroyal Chemical Company, Inc.
Michigan Cherry Committee	Nutramax Laboratories, Inc.	United Agri Products, Inc.
Michigan Corn Growers Association	Nutratch, Inc.	University of Idaho
Michigan Crop Improvement Association, Inc.	Nutrition Physiology Corporation	University of Illinois
Michigan Department of Agriculture	O.J. Noer Research Foundation, Inc.	University of Kentucky
Michigan Department of Natural Resources	Ohio Florists' Association	University of Maryland
Michigan Department of Transportation	Pacific Biocontrol Corporation	University of Massachusetts
Michigan Economic Development Corporation	PFI International, Inc.	University of Michigan
Michigan Forestry & Park Association	Pfizer, Inc.	University of Missouri
Michigan Hay & Grazing Council	Pharmacia Corporation	University of Nebraska
Michigan Mint Research & Development Program	Pickle and Pepper Research Committee	University of Vermont
Michigan Nursery & Landscape Association	Pickle Packers International, Inc.	University of Wisconsin
Michigan Peach Sponsors	Pickle Seed Research Fund	U.S. Agency for International Development
Michigan Pear Research Association	Pickseed West, Inc.	U.S. Borax, Inc.
Michigan Plum Advisory Board	Pioneer Hi-Bred International, Inc.	U.S. Department of Agriculture
Michigan Potato Industry Commission	Plant Health Care, Inc.	U.S. Department of Energy
Michigan Sea Grant College Program	Post Gardens of Battle Creek, Inc.	U.S. Department of the Interior
Michigan Soybean Promotion Committee	Purdue University	U.S. Environmental Protection Agency
Michigan State Horticultural Society	QVC, Inc.	U.S. Food and Drug Administration
Michigan State Millers' Association	Rohm & Haas Company	U.S. Poultry & Egg Association
Michigan Turfgrass Foundation	Rural Opportunities, Inc.	U.S.D.A. Agricultural Research Service
Michigan Vegetable Council, Inc.	Rutgers, The State University of New Jersey	U.S.D.A. Cooperative State Research, Education, & Extension Service
Micro Flo Company	Saatzucht Steinach GmbH	U.S.D.A. Forest Service
Mid-America Food Processors Association	Saginaw County	Valent BioSciences Corporation
Midwest Nut Producers Council	Saint Louis Zoo	Valent U.S.A. Corporation
Mink Farmers Research Foundation	Scotts Company	Virginia Polytechnic Institute & State University
Mississippi Valley State University	Seminis Vegetable Seeds, Inc.	Ward's Natural Science Establishment, Inc.
Monitor Sugar Company	SePRO Corporation	Washington State Tree Fruit Research Commission
Monsanto Company	Sipcam Agro USA, Inc.	Weed Science Society of America
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National Aeronautics & Space Administration	Softspikes, Inc.	Westvaco Corporation
National Grape Co-operative Association, Inc.	Sonnyside Flowers	Willard G. Pierce & Jessie M. Pierce Foundation
	Source Technology Biologicals, Inc.	William Beaumont Hospital
	Southern Illinois University	Wisconsin Department of Natural Resources
	Spring Meadow Nursery, Inc.	
	Stacy's Greenhouses	
	Star of the West Milling Company	

Financial Report

July 1, 2000 to June 30, 2001

DISTRIBUTION OF APPROPRIATED FUNDS



INCOME:

\$79,474,316

Federal Appropriations\$5,161,268
Hatch	\$ 3,931,411
McIntire-Stennis	\$ 210,205
Hatch RRF	\$ 931,103
Hatch Animal and Disease, Section 1433	\$ 88,549
State Appropriations\$36,305,012
TOTAL APPROPRIATIONS:\$41,466,280
Grants — Federal, State and Private\$38,008,036

EXPENSES:

\$79,474,316

Salaries	\$23,898,380
Fringe Benefits	\$ 7,553,660
Project Expenses	\$10,014,240
Grants — Federal, State and Private*	\$38,008,036

Personnel

(Full-time Equivalents Funded From Appropriated Funds)

Research Staff**	154.77
Professors	70.44
Associate Professors	26.91
Assistant Professors	31.10
Research Associates and Specialists	26.32
Support Staff	161.87
Administrative Professionals	84.12
Supervisors	23.84
Clerical	41.29
Technicians	12.62

* 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



SR-120, February 2002

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