



2000

Annual Report

Michigan State University



*Michigan Agricultural
Experiment Station*



2000 Annual Report

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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All illustrative photos by Kurt Stepnitz, MSU photographer, except as noted.

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

Partnerships create success

2000

The Michigan Agricultural Experiment Station embraces the concept of collaboration and partnership with Michigan communities, agricultural and natural resources industries and organizations, and governmental agencies in addressing critical issues. These relationships have resulted in wide-ranging success. Complex challenges — the loss of the use of some pesticides through the Food Quality Protection Act (FQPA), the effects of global warming on insect pest life cycles, the outbreak of tuberculosis in cattle in northeastern Michigan, the need to improve the health of Michigan's rural families living in poverty call for the combined efforts of researchers, Extension agents, producers, agribusinesses, community and nonprofit groups, and state officials.

Project GREEN, the state's plant agriculture initiative, provided funding for many research and educational projects to address issues identified as important to the long-term economic viability and progressiveness of plant agriculture. Among Project GREEN success stories is the development of methods to control late blight in potatoes, which saves producers in the state millions of dollars, and the discovery of a nonchemical method to store apples, which allows producers and shippers a wider market in which to sell their product. More information on Project GREEN can be obtained through its Web site at <www.green.msu.edu>.

The Animal Industry Initiative (AII) has funded 96 projects since its inception in 1995, and the completed projects can be viewed on its new Web site, <www.animalag.msu.edu>. Turkey production and processing in the state have benefitted from AII and its



Dr. J. Ian Gray

partnerships with the industry, MSU Extension, the Michigan Department of Agriculture (MDA) and the MAES in creating the Michigan Turkey Producers Co-op facility in Wyoming, Mich. This turkey processing cooperative has allowed the state's turkey producers to stay in business after their contracts were discontinued by Bil-Mar Foods in 1998 and is providing employment for more than 270 people.

Tuberculosis (TB) in deer and its spread into cattle and other animals is a major issue in Michigan. With the research goal of developing efficient and effective control/eradication programs for bovine TB in Michigan, MAES and MSU researchers are using risk analysis concepts to provide the best source of information to design these programs, integrating information from epidemiology, pathology, biology, economics and sociology. The risk analysis is based on current, reliable data that take into consideration the epidemiology of the disease, the biology of potential hosts, the economic and social impacts of disease and control/eradication on stakeholders, and communication needs to keep stakeholders informed and educated on the bovine TB problem in Michigan. The university is a partner in maintaining the information on the TB Web site at <www.bovinetb.com>.

In July, the MAES and the Office of the Vice President for Research and Graduate Studies committed funds for the next five years to the newly formed Center for Plant Products and Technologies. Initial research

activity will focus on nutritional genomics, biobased industrial products, metabolic engineering and processing, natural products and phytomedicine.

MAES programs in the areas of children, youth, families and communities continue to flourish. The Families and Communities Together (FACT) coalition is the university's multidisciplinary research, Extension and outreach group that invests in research and outreach, links campus and community resources and serves as an information hub for news, research, funding and programs for children, families and communities. FACT supports partnerships involving 11 MSU colleges, Extension staff members on campus and throughout the state, and professionals from groups such as the Michigan Children's Trust Fund, the Michigan Association of School Boards and the Mott Children's Health Center; governmental agencies that include the Michigan Department of Education and Head Start; nonprofit organizations and foundations including the Council of Michigan Foundations, the W. K. Kellogg Foundation and the Frye Foundation. In October 2000 the FACT forum, "Building Family and Community Assets: A Dialogue with Foundations," engaged leaders from foundations, nonprofit organizations and universities in a dialogue on building partnerships to strengthen Michigan's families and communities.

Environmental stewardship continues to be a major theme for MAES research programs. The Golf Course Superintendents Association of America (GCSAA) has given its 2001 President's Award to the Michigan Turfgrass Environmental Stewardship Program (MTESP) at MSU. This program to environmentally enhance Michigan's golf courses is the only program of its kind in

the United States. The MTESP is a partnership between MSU, the Michigan Turfgrass Foundation, the Golf Association of Michigan, the MDA and the Michigan Department of Environmental Quality.

These accomplishments are the result of our partnerships with MSU Extension, commodity and processor groups, and community, state and national governmental agencies, and we are thankful and appreciative of their continued commitment to the MAES. In developing a balanced research agenda of basic and applied research, we always keep in mind that the results of such research must stand the test of public scrutiny. We are fortunate to have a high caliber of faculty at Michigan State University who have taken on the challenge of working in a more complex world, where there are many opportunities for partnerships, collaborations and multidisciplinary research. The MAES is especially grateful to MSU Provost Lou Anna Simon for funding new positions designed to strengthen our expertise in food safety, plant sciences including nutritional genomics and phytoremediation, animal genomics, and animal health diagnostics.

Our challenges are complex, but we are becoming more proactive in identifying potential problems. Along with associate directors Janet Bokemeier and Gary Lemme and assistant director Doreen Woodward, I look forward to continued success as the MAES and its partners address critical needs in Michigan and beyond.



J. Ian Gray, Director

Michigan Agricultural Experiment Station

Michigan Agricultural Experiment Station

As of 10-1-2000

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

Martha Lovejoy, Support Staff

Isidra Pérez, Support Staff



Photo by Robin Millsap



Photo by Robin Millsap

MAES Affiliated Deans

As of 10-1-2000

William W. Taylor, Acting Dean
College of Agriculture & Natural Resources

Julia R. Miller, Dean
College of Human Ecology

George E. Leroi, Dean
College of Natural Science

Gary A. Manson, Acting Dean
College of Social Science

Lonnie J. King, Dean
College of Veterinary Medicine

MAES Unit Administrators

(Units receiving base funding)

As of 10-1-2000

Kirk L. Heinze, Chairperson
ANR Education and Communication Systems

Larry G. Hamm, Chairperson
Agricultural Economics

Ajit K. Srivastava, Chairperson
Agricultural Engineering

Maynard G. Hogberg, Chairperson
Animal Science

William L. Smith, Chairperson
Biochemistry and Molecular Biology

Raymond K. Hammerschmidt, Acting Chairperson
Botany and Plant Pathology

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

Wayne H. Loescher, Chairperson
Horticulture

Dana G. Stewart, 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

Edward C. Mather, Acting Director
National Food Safety and Toxicology Center

Bruce R. Harte, Director
School of Packaging

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

William S. Spielman, Chairperson
Physiology

Kenneth Keegstra, Director
MSU-DOE Plant Research Laboratory

Richard E. Groop, Director
Center for Remote Sensing

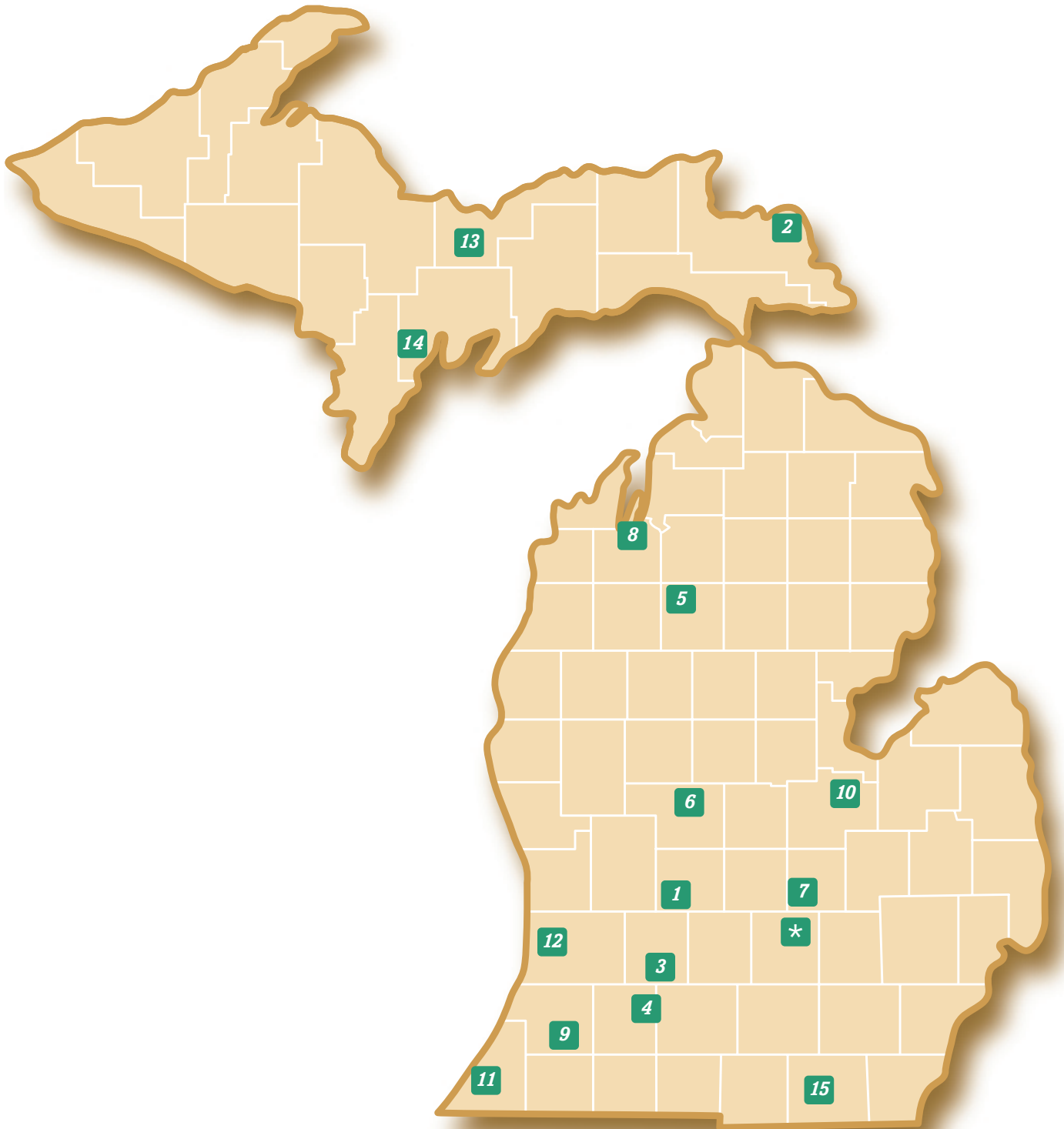
Scott G. Witter, Acting Chairperson
Resource Development

Thomas L. Conner, Chairperson
Sociology

Willie M. Reed, Interim Chairperson
Veterinary Pathology

Jon F. Bartholic, Director
Institute of Water Research

Michigan Agricultural Experiment Station Outlying Stations —10-1-2000



- 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
 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
 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
 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
- 13. UPPER PENINSULA EXPERIMENT STATION**
Established 1899
 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 10-1-2000

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

NAME	DEPARTMENT
Adams, Gerard C.	Botany & Plant Pathology
Allen, Michael	Animal Science
Allison, Richard F.	Botany & Plant Pathology
Alocilja, Evangelyn C.	Agricultural Engineering
Aronoff, Marilyn B.	Sociology
Aulerich, Richard J.	Animal Science
Ayers, George S.	Entomology
Bagdasarian, Michael	Microbiology & Molecular Genetics
Baker, John C.	Large Animal Clinical Sciences
Balander, Richard J.	Animal Science
Banks, Bobby D.	Animal Science
Bates, Ronald O.	Animal Science
Batie, Sandra S. ¹	Agricultural Economics
Beaudry, Randolph M.	Horticulture
Beckwith, JoAnn	Resource Development
Beede, David ⁵	Animal Science
Behe, Bridget K.	Horticulture
Bell, Thomas G.	Veterinary Pathology
Bence, James R. ⁶	Fisheries & Wildlife
Benning, Christoph	Biochemistry & Molecular Biology
Bennink, Maurice R.	Food Science & Human Nutrition
Benson, Margaret E.	Animal Science
Berglund, Kris A.	Agricultural Engineering
Bickert, William G.	Agricultural Engineering
Biernbaum, John A.	Horticulture
Bingen, R. James	Resource Development
Bird, George W.	Entomology
Black, J. Roy	Agricultural Economics
Bolin, Carole A.	Veterinary Pathology
Bolin, Steven R.	Veterinary Pathology
Booren, Alden M.	Food Science & Human Nutrition
Bourquin, Leslie D.	Food Science & Human Nutrition
Boyd, Stephen A.	Crop & Soil Sciences
Bremigan, Mary T. ⁶	Fisheries & Wildlife
Breznak, John A.	Microbiology & Molecular Genetics
Bristow, Catherine M.	Entomology
Bronstein, Daniel A.	Resource Development
Brook, Roger C.	Agricultural Engineering
Bucholtz, Herbert F.	Animal Science
Bughrara, Suleiman S.	Crop & Soil Sciences
Bursian, Steven	Animal Science

NAME	DEPARTMENT
Burton, Jeanne L.	Animal Science
Burton, Zachary F.	Biochemistry & Molecular Biology
Busch, Lawrence M.	Sociology
Bush, Guy L.	Kellogg Biological Station
Buskirk, Daniel J.	Animal Science
Cameron, Arthur C.	Horticulture
Campa, Henry III	Fisheries & Wildlife
Carlson, William H.	Horticulture
Cash, Jerry N.	Food Science & Human Nutrition
Champness, Wendy C.	Microbiology & Molecular Genetics
Cheney, Laura L.	Agricultural Economics
Chenoweth, Wanda L.	Food Science & Human Nutrition
Chou, Karen	Animal Science
Clarke, Robert H.	Packaging
Coe, Paul H.	Animal Science
Coon, Thomas G.	Fisheries & Wildlife
Coussens, Paul M.	Animal Science
Crawford, Eric W.	Agricultural Economics
Cregg, Bert M.	Horticulture
Crum, James L.	Crop & Soil Sciences
Dazzo, Frank B.	Crop & Soil Sciences
Dazzo, Frank B.	Microbiology & Molecular Genetics
de Bruijn, Frans J.	Microbiology & Molecular Genetics
de Bruijn, Frans J.	Plant Research Laboratory
de Zoeten, Gustaaf A.	Botany & Plant Pathology
Della Penna, Dean	Biochemistry & Molecular Biology
Dersch, Eckhart	Resource Development
Dickmann, Donald I.	Forestry
DiFonzo, Christina D.	Pesticide Research Center
DiFonzo, Christina D.	Entomology
Dilley, David R.	Horticulture
D'Itri, Frank M.	Institute of Water Research
Dolan, Kirk D.	Agricultural Engineering
Dolan, Kirk D.	Food Science & Human Nutrition
Dong, Ke	Entomology
Douches, David S.	Crop & Soil Sciences
Doumit, Matthew E.	Animal Science
Doumit, Matthew E.	Food Science & Human Nutrition
Downes, Theron W.	Packaging
Edson, Charles E.	Horticulture
Epperson, Bryan K.	Forestry

NAME	DEPARTMENT
Ernst, Catherine W.	Animal Science
Erskine, Ronald J.	Large Animal Clinical Sciences
Fernandez, Rodney T.	Horticulture
Ferris, Theodore A.	Animal Science
Flore, James A.	Horticulture
Fogwell, Ralph L.	Animal Science
Foster, Eunice F.	Crop & Soil Sciences
Fraker, Pamela J.	Biochemistry & Molecular Biology
Fraker, Pamela J.	Food Science & Human Nutrition
Frank, Kevin W.	Crop & Soil Sciences
Freed, Russell D.	Crop & Soil Sciences
Fulbright, Dennis W.	Botany & Plant Pathology
Gage, Douglas A.	Biochemistry & Molecular Biology
Gage, Stuart H.	Entomology
Garling, Donald L.	Fisheries & Wildlife
Gerrish, John B.	Agricultural Engineering
Giacin, Jack R.	Packaging
Giesy, John P.	National Food Safety & Toxicology Center
Grooms, Daniel L.	Large Animal Clinical Sciences
Grumet, Rebecca	Horticulture
Gut, Larry J.	Entomology
Guyer, Daniel E.	Agricultural Engineering
Hammerschmidt, Raymond	Botany & Plant Pathology
Hancock, James F.	Horticulture
Hanson, Eric J.	Horticulture
Hanson, Steven D.	Agricultural Economics
Harkema, Jack R.	Veterinary Pathology
Harris, Craig K.	Sociology
Harsh, Stephen B.	Agricultural Economics
Hart, James B., Jr.	Forestry
Hart, L. Patrick	Botany & Plant Pathology
Harwood, Richard R. ²	Crop & Soil Sciences
Hausbeck, Mary K.	Botany & Plant Pathology
Hausinger, Robert P.	Biochemistry & Molecular Biology
Hausinger, Robert P.	Microbiology & Molecular Genetics
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
Herner, Robert C.	Horticulture
Hill, Gretchen M.	Animal Science
Hoehn, John P.	Agricultural Economics
Hoerr, Sharon M.	Food Science & Human Nutrition
Holecek, Donald F.	Park, Recreation, & Tourism Resources



NAME	DEPARTMENT
Hollingsworth, Rawle I.	Biochemistry & Molecular Biology
Hollingworth, Robert M.	Entomology
Horan, Richard D.	Agricultural Economics
Hord, Norman G.	Food Science & Human Nutrition
Howe, Gregg A.	Plant Research Laboratory
Howell, Gordon S.	Horticulture
Huang, Zhiyong	Entomology
Iezzoni, Amy F.	Horticulture
Imig, David R.	Family & Child Ecology
Ireland, James J.	Animal Science
Isaacs, Rufus	Entomology
Jacobs, Lee W.	Crop & Soil Sciences
Jarosz, Andrew M.	Botany & Plant Pathology
Johnson, Nan E.	Sociology
Jones, Alan L.	Botany & Plant Pathology
Jones, Michael L. ⁶	Fisheries & Wildlife
Jump, Donald B.	Physiology
Kaguni, Jon M.	Biochemistry & Molecular Biology
Kakela, Peter J.	Resource Development
Kamdern, 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.	Botany & Plant Pathology
Klug, Michael J.	Microbiology & Molecular Genetics

NAME	DEPARTMENT	NAME	DEPARTMENT
Knezek, Bernard D.	Crop & Soil Sciences	Osburn, Wesley N.	Food Science & Human Nutrition
Kobe, Richard K.	Forestry	Osteryoung, Katherine W.	Botany & Plant Pathology
Kroos, Lee R.	Biochemistry & Molecular Biology	Padgett, George A.	Veterinary Pathology
Landis, Douglas A.	Entomology	Patterson, Jon S.	Veterinary Pathology
Lang, Gregory A.	Horticulture	Penner, Donald A.	Crop & Soil Sciences
Lang, Nancy Suzanne	Horticulture	Perry, Ronald L.	Horticulture
LaPres, John J.	Biochemistry & Molecular Biology	Person, Howard L.	Agricultural Engineering
Lee, Julian J. L.	Packaging	Pestka, James J.	Food Science & Human Nutrition
Leefers, Larry A.	Forestry	Peterson, H. Christopher	Agricultural Economics
Leep, Richard H.	Crop & Soil Sciences	Peyton, R. Benny	Fisheries & Wildlife
Lenski, Richard E. ³	Crop & Soil Sciences	Poff, Kenneth L.	Botany & Plant Pathology
Li, Weiming ⁶	Fisheries & Wildlife	Potter-Witter, Karen L.	Forestry
Liburd, Oscar E.	Entomology	Prather, L. Alan	Botany & Plant Pathology
Linz, John E.	Food Science & Human Nutrition	Preiss, Jack	Biochemistry & Molecular Biology
Liu, Jianguo ⁶	Fisheries & Wildlife	Prince, Harold H.	Fisheries & Wildlife
Lloyd, James W.	Agricultural Economics	Propst, Dennis B.	Park, Recreation, & Tourism Resources
Loudon, Theodore L.	Agricultural Engineering	Pursley, James R.	Animal Science
Lownds, Norman K.	Horticulture	Pysarchik, Dawn I.	Human Environment & Design
Lupi, Frank ⁶	Fisheries & Wildlife	Raikhel, Alexander S.	Entomology
Lupi, Frank ⁶	Agricultural Economics	Ramm, Carl W.	Forestry
Maes, Roger K.	Microbiology & Molecular Genetics	Raper, Kellie K.	Agricultural Economics
Malmström, Carolyn	Botany & Plant Pathology	Reddy, C. Adinarayana	Microbiology & Molecular Genetics
Mansfield, Linda	Large Animal Clinical Sciences	Renner, Karen A.	Crop & Soil Sciences
Marks, Bradley P.	Agricultural Engineering	Ricks, Donald J.	Agricultural Economics
Maurer, Brian A. ⁶	Fisheries & Wildlife	Ritchie, Harlan D.	Animal Science
McCullough, Deborah G.	Entomology	Ritchie, Joe T. ⁴	Crop & Soil Sciences
McDonough, Maureen H.	Forestry	Roberson, Kevin D.	Animal Science
Melakeberhan, Haddish	Entomology	Robertson, G. Phillip	Crop & Soil Sciences
Merritt, Richard W.	Entomology	Robinson, Norman E.	Large Animal Clinical Sciences
Millenbah, Kelly F.	Fisheries & Wildlife	Robison, Lindon J.	Agricultural Economics
Miller, James R.	Entomology	Rogers, John N., III	Crop & Soil Sciences
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
Nielsen, Brian D.	Animal Science	Rozeboom, Dale	Animal Science
Norris, Patricia E.	Resource Development	Rudy, Alan P.	Sociology
Norris, Patricia E.	Agricultural Economics	Rugh, Clayton L.	Crop & Soil Sciences
Northcott, William J.	Agricultural Engineering	Rust, Steven R.	Animal Science
Oehmke, James F.	Agricultural Economics	Ryser, Elliott T.	Animal Science
Ofoli, Robert Y.	Food Science & Human Nutrition	Ryser, Elliott T.	Food Science & Human Nutrition
Ohlrogge, John B.	Botany & Plant Pathology	Safir, Gene R.	Botany & Plant Pathology
Olsen, Larry G.	Entomology	Sang, Tao	Botany & Plant Pathology
Orth, Michael	Animal Science	Schiarnberg, Lawrence R.	Family & Child Ecology
Osburn, Wesley N.	Animal Science	Schilder, Annemiek C.	Botany & Plant Pathology

NAME	DEPARTMENT
Schindler, Melvin S.	Biochemistry & Molecular Biology
Schmid, A. Allan	Agricultural Economics
Schmidt, Thomas M.	Microbiology & Molecular Genetics
Schroeder, Joseph J.	Food Science & Human Nutrition
Schultink, Gerhardus	Resource Development
Schutzki, Robert E.	Horticulture
Schwab, Gerald D.	Agricultural Economics
Schweikhardt, David B.	Agricultural Economics
Scriber, J. Mark	Entomology
Scribner, Kim T. ⁶	Fisheries & Wildlife
Sears, Barbara B.	Botany & Plant Pathology
Sears, Phillip M.	Large Animal Clinical Sciences
Segerlind, Larry J.	Agricultural Engineering
Singh, Sher Paul	Packaging
Sink, Kenneth C.	Horticulture
Skole, David L.	Geography
Slocum, Ann C.	Human Environment & Design
Smith, George W.	Animal Science
Smitley, David R.	Entomology
Smucker, A.J.M.	Crop & Soil Sciences
Snapp, Sieglinde S.	Horticulture
Snapp, Sieglinde S.	Crop & Soil Sciences
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.	Food Science & Human Nutrition
Steffe, James F.	Agricultural Engineering
Stehr, Frederick W.	Entomology
Sternquist, Brenda J.	Human Environment & Design
Strasburg, Gale M.	Food Science & Human Nutrition
Straw, Barbara E.	Large Animal Clinical Sciences
Stynes, Daniel J.	Park, Recreation, & Tourism Resources
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 M.	Entomology
Thomashow, Michael F.	Microbiology & Molecular Genetics
Thomashow, Michael F.	Crop & Soil Sciences
Tiedje, James M.	Crop & Soil Sciences
Tiedje, James M.	Microbiology & Molecular Genetics
Trail, Frances	Botany & Plant Pathology

NAME	DEPARTMENT
Triezenberg, Steven J.	Biochemistry & Molecular Biology
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 J.	Animal Science
Vander Stoep, Gail A.	Park, Recreation, & Tourism Resources
Vanderpool, Christopher K.	Sociology
Vargas, Joseph M., Jr.	Botany & Plant Pathology
Velicer, Leland F.	Microbiology & Molecular Genetics
von Bernuth, Robert D.	Agricultural Engineering
Walker, Edward D.	Entomology
Walker, Rosemary A.	Family & Child Ecology
Walters, Michael B. ⁶	Forestry
Walton, Jonathan D.	Plant Research Laboratory
Wang, John L.	Biochemistry & Molecular Biology
Ward, Richard W.	Crop & Soil Sciences
Warncke, Darryl D.	Crop & Soil Sciences
Watson, J. Throck	Biochemistry & Molecular Biology
Weatherspoon, Dave D.	Agricultural Economics
Weber, Michael T.	Agricultural Economics
Weber, Miriam S.	Animal Science
Whalon, Mark E.	Entomology
Whims, Fred R.	ANR Education & Communication Systems
Whipple, Judith M.	Agricultural Economics
Widders, Irvin E.	Horticulture
Winterstein, Scott R.	Fisheries & Wildlife
Witter, Scott G.	Resource Development
Wolf, Christopher A.	Agricultural Economics
Yin, Runsheng	Forestry
Yokoyama, Melvin T.	Animal Science
Zabadal, Thomas J.	Horticulture
Zacharewski, Timothy R.	Biochemistry & Molecular Biology
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 10-1-2000. 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 10-1-2000.
 *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 and Agriculture Policy
Black, J. Roy	12	0.80	0.00	0.20	Farm Management
Cheney, Laura L.	14	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

Agricultural Economics (continued)

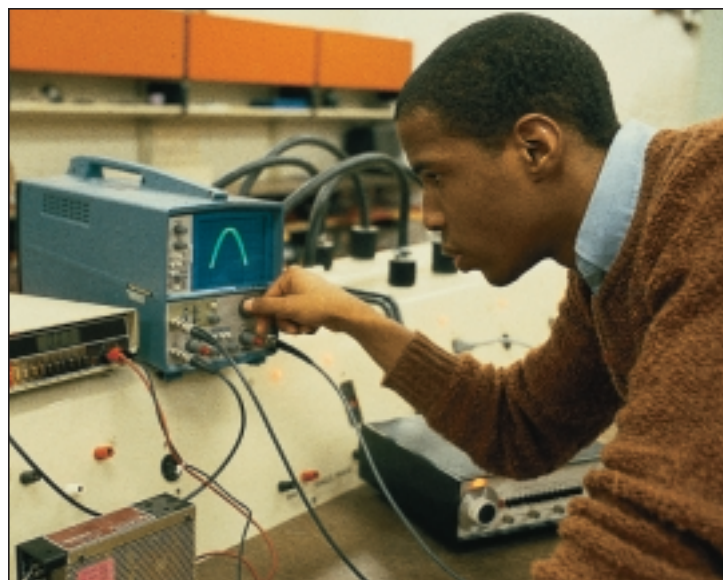
	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
Swinton, Scott M.	13	0.70	0.00	0.30	Production Economics
van Ravenswaay, Eileen O.	12	0.75	0.00	0.25	Environmental Economics & Public Policy
Weatherspoon, Dave D.	14	0.40	0.00	0.60	Food & Agribusiness Management
Weber, Michael T.	12	0.80	0.00	0.20	International Development
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:		13.57	4.72	8.71	
<i>Adjustment for PERM Positions</i>		<i>-0.15</i>	<i>-0.42</i>	<i>-0.43</i>	
ADJUSTED TOTALS		13.42	4.30	8.28	

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 Analyses 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.
MICL01666*	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, H.
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.
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.

Agricultural Engineering

Phone: 355-4720



Stock Photo



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
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	Food 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
Segerlind, Larry J.	12	0.35	0.00	0.65	Finite Element Analysis/Structures
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:		6.00	3.96	6.04	

PROJECTS

MICL01245*	Improvement of Thermal 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.
MICL01767	Development of Chemical Application Technology for Agribusiness	Van Ee, G.
MICL01777	Engineering for Food Quality and Safety	Brook, R.
MICL01784	Marketing and Delivery of Quality Cereals and Oilseeds	Bakker-Akema, F.
MICL01787	Improvement of Small-Scale Decentralized and Onsite Wastewater Treatment and Disposal	Loudon, T.

Agricultural Engineering (continued)

PROJECTS

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	Seegerind, L.
MICL01935	Laser Spectroscopy for Analysis of Crystallization Processes	Berglund, K.
MICL07642	Bioprocessing for Utilization of Agricultural Raw Materials	Berglund, K.
MICL08180	Rheology and Protein Chemistry of "Undeveloped" Dough	Steffe, J.
MICL08238	Role of Precision Ag Technology in Selected Biological and Environmental Monitoring Components for Potato IPM	Brook, R.

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
Aulerich, Richard J.	12	0.75	0.25	0.00	Fur-bearing Animals/Nutrition/ Toxicology
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 E.	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 J.	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	Physiology
Hill, Gretchen M.	13	0.75	0.00	0.25	Swine Nutrition
Ireland, James J.	12	0.95	0.00	0.05	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

Animal Science (continued)

	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
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 R.	12	0.50	0.50	0.00	Beef Feedlot Nutrition
Ryser, Elliott T.	14	0.17	0.00	0.83	Dairy Manufacturing/Microbiology
Smith, George W.	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 J.	13	0.65	0.00	0.35	Dairy Nutrition
Weber, 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:		17.82	8.40	9.78	

PROJECTS

MICL01039	Fur Animal Studies (Mink)	Aulerich, R.
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	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	Optimizing Nutrition and Management of Dry, Peripartum and Early Lactation Dairy Cows	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 Artificial Insemination of 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.

Animal Science (continued)

PROJECTS

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.
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.
MICL01952	Increasing Efficiency of Milk Production in Dairy Cattle	Weber, M.
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, D.
MICL03374	Maximum Utilization of Michigan Grown Feedstuffs for Growing-Finishing Cattle	Rust, S.
MICL03402	Animal Functional Genomics	Coussens, P.
MICL06883	The Use of Propionibacterium for Prevention of Lactic Acidosis	Rust, S.
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.
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.

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
TOTALS:		0.37	0.97	0.66	

PROJECTS

MICL03316	Assessing Retailer/Consumer Perceptions and Use of Michigan-Produced Commodities	Heinze, K.
MICL03372	Evaluation of Area of Expertise (AOE) Team Approach to Applied Research and Extension in Michigan	Suvedi, M.

Biochemistry & Molecular Biology

Phone: 355-1600



Photo by Robin Millsap



William L. Smith, Chair

FACULTY

	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
Benning, Christoph	14	0.67	0.00	0.33	Plant Biochemistry
Burton, Zachary F.	13	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
LaPres, 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	Mechanism of Aluminum Toxicity Optical Trap Measurements of Cytoskeletal Dysfunction in Living Cells	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.
MICL08219	Role of Oxylipins in the Regulation of Plant Defense	Howe, G.
MICL08225	Genetic Engineering of Amylosaccharidases for Agricultural Bioprocessing	Zeikus, J.
MICL08248	Increasing the Vitamin E Content of Vegetable Oils.	Della Penna, D.

Botany & Plant Pathology

Phone: 355-4683



Raymond K. Hammerschmidt, Acting Chair

FACULTY

	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
Adams, Gerard C.	13	0.55	0.27	0.18	Plant Pathology/Mycology
Allison, Richard F.	13	0.75	0.00	0.25	Plant Molecular Virology
de Zoeten, Gustaaf A.	12	0.72	0.02	0.26	Plant Pomology/Virology
Fulbright, Dennis W.	12	0.83	0.00	0.17	Plant Pathology/Plant Pathogen Genetics
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	0.75	0.00	0.25	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
Malmström, Carolyn	14	0.10	0.00	0.90	Ecosystem Dynamics/Ecological Role of Plant Pathogens
Ohlogge, 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, Kenneth L.	12	0.25	0.00	0.75	Plant Physiology
Prather, L. Alan	14	0.25	0.00	0.75	Plant Systematics
Safir, Gene R.	12	0.90	0.00	0.10	Plant Pathology/Mycorrhizal Fungi
Sang, Tao	14	0.25	0.00	0.75	Plant Systematics & Molecular Evolution
Schilder, Annemiek C.	14	0.45	0.45	0.10	Plant Pathology/Small Fruits
Sears, Barbara B.	12	0.25	0.00	0.75	Molecular Biology & Plant Organelle Genetics
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:		10.14	3.19	7.67	

PROJECTS

MICL01206*	Biological Control of Soil and Residue-Borne Plant Pathogens	Safir, G.
MICL01259*	<i>Fusarium</i> 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.
MICL01533	Genetic Engineering of Oilseed Crops	Ohlogge, J.
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.
MICL01679	<i>Plastome mutator</i> of <i>Oenothera</i> : A Nuclear Gene That Causes Chloroplast DNA Mutations	Sears, B.
MICL01756*	Multidisciplinary Evaluation of New Apple Cultivars	Jones, A.
MICL01808	Recombination Between Viral RNA and Transgenic Plant Transcripts	Allison, R.
MICL01827	Complementation of Movement Function Between Genetic Components of Pea Enation Mosaic Virus	de Zoeten, G.

Botany & Plant Pathology (continued)

PROJECTS

MICL01832	Management of Turfgrass Diseases	Vargas, J.
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, F.
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.
MICL01954	Epidemiology and Integrated Management of Small Fruit Diseases	Schilder, A.
MICL01962*	Eradication, Containment And/Or Management of Plum Pox (Sharka Disease)	Jones, A.
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.
MICL07636	Controlling Fire Blight Disease of Apple Trees FY99	Jones, A.
MICL07646	Controlling Fire Blight Disease of Apple Trees FY00	Jones, A.
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.

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 and 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.	13	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
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 A.	12	0.80	0.00	0.20	Crop/Weed/Physiology
Renner, Karen A.	12	0.50	0.50	0.00	Weed Science
Ritchie, Joe T. ⁴	12	0.00	0.50	0.00	Soil Physics/Plant Stress

	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
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 and Cellular Genetics
Smucker, A.J.M.	12	0.75	0.00	0.25	Soil Biophysics
Snapp, Sieglinde S.	14	0.25	0.25	0.50	Integrated Production & Management of Vegetable Crops
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
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:		14.59	5.15	9.76	

PROJECTS

MICL00319	Classification, Genesis and Evaluation of Michigan Soils	Mokma, D.
MICL00569	Breeding and Testing Small Grain Cultivars 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 in Soils	Boyd, S.
MICL01617*	Biological and Ecological Basis for Weed Management Decision Support Systems to Reduce Herbicide Use	Kells, J.
MICL01654	Genetic Improvement of Beans (<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*	Characterizing Nitrogen Mineralization and Availability in Crop Systems to Protect Water Resources	Jacobs, L.
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.
MICL01796	Soil and Site-Specific Management for Conservation in Agricultural Systems	Pierce, F.
MICL01797	Soil Microbiology and Biochemistry in Agroecosystems	Paul, E.
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.
MICL01866	Simulation and Measurement of the Water, Nitrogen and Phosphorus Dynamics in Field Crop Production	Ritchie, J.
MICL01872	Nitrogen Loss in Row Crop Agriculture	Robertson, G.
MICL01884	Soil Biophysical Mechanisms of Soil Aggregation	Smucker, A.

Crop & Soil Sciences (continued)

PROJECTS

MICL01909	Turfgrass Physiology and Site-Specific Management	Baird, J.
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.
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.
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.

Entomology

Phone: 355-4663



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Edward J. Grafius,
Chair

FACULTY

	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
Ayers, George S.	12	0.25	0.00	0.75	IPM/Apiculture
Bird, George W.	12	0.23	0.62	0.15	Agricultural Nematology
Bristow, Catherine M.	13	0.30	0.00	0.70	Insect Ecology
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
Gage, Stuart H.	12	0.48	0.12	0.40	Environmental Systems/Entomological Surveys
Gut, Larry J.	14	0.25	0.65	0.10	Tree Fruit Insects
Hollingworth, Robert M.	12	0.30	0.11	0.59	Pesticide Toxicology/Action Insecticide Resistance/IR 4 Program
Huang, Zhiyong	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

	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
Liburd, Oscar E.	14	0.30	0.20	0.50	Fruit Insect Pest Management
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
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/Ornamental Insect Ecology
Stehr, Frederick W.	12	0.40	0.00	0.60	Insect Biocontrol Systems
Thiem, Suzanne M.	13	0.40	0.00	0.60	Insect Molecular Biology
Walker, Edward D.	13	0.33	0.33	0.34	Medical/Veterinary Entomology
Whalon, Mark E.	12	0.60	0.00	0.40	Fruit Insect Pest Management/ Insecticide Resistance Management
TOTALS:		8.18	5.34	10.48	

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	Biological Control and Integrated Management of Insects in Nurseries, Turf and the Urban Forest	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.
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 Center for Arthropod Diversity Study	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 the German Cockroach	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.
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.

Entomology (continued)

PROJECTS

MICL07628	Management of the North Central Regional Pesticide Impact Assessment Program (NCPIAP) for FY98	Olsen, L.
MICL07633	Management of the North Central Regional Pesticide Impact Assessment Program (NCPIAP) for FY99	Olsen, L.
MICL07638	Michigan's CSREES NAPIAP Program-1999	Olsen, L.
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.
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 Rhabdovirus Species	Liburd, O.

Family & Child Ecology

Phone: 355-7680



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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
Schiamberg, 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	Schiamberg, L.
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

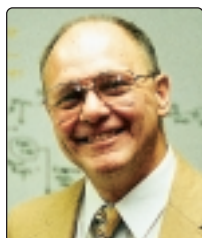
	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
Bence, James R. ⁶	13	0.75	0.20	0.05	Fish Population Dynamics/Fish Ecology
Bremigan, Mary T. ⁶	14	0.60	0.00	0.40	Fish Management
Campa, Henry III	13	0.50	0.00	0.50	Wildlife Habitat Ecology
Coon, Thomas G.	13	0.20	0.00	0.80	Fish Ecology/Stream Management
Garling, Donald 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
Peyton, R. Benny	12	0.42	0.00	0.58	Human Dimensions
Prince, Harold H.	12	0.75	0.00	0.25	Waterfowl/Wetlands
Scribner, Kim T. ⁶	14	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:		9.37	2.18	5.45	
<i>Adjustment for PERM Positions</i>		<i>-5.70</i>	<i>-1.68</i>	<i>-1.62</i>	
ADJUSTED TOTALS		3.67	0.50	3.83	

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.
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.
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.
MICL09006	Support for a National Coordinator for Aquaculture New Animal Drug Applications	Batterson, T.
MICL10008	Regional Aquaculture Center	Batterson, T.
MICL10009	Regional Aquaculture Center	Batterson, T.
MICL10010	Regional Aquaculture Center	Batterson, T.
MICL10011	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
Dolan, Kirk D.	14	0.25	0.50	0.25	Plant and 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
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
Romsos, Dale R.	12	0.50	0.00	0.50	Lipid Metabolism
Ryser, Elliott T.	14	0.53	0.00	0.47	Dairy Foods
Schroeder, Joseph J.	14	0.50	0.00	0.50	Nutritional Biochemistry; Bioactive Lipids
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
Zile, Majja H.	12	0.50	0.00	0.50	Nutrition
TOTALS:		8.89	2.75	11.36	

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, Pest Resistance and Food Value	Uebersax, M.
MICL01599	Regulation of Calcium in Muscle Sarcoplasm	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	Chenoweth, W.
MICL01699	Molecular Structure of Soft Wheat Proteins in Relation to End-Use Quality	Ng, P.
MICL01706	Interactions of Biological Macromolecules at the Liquid-Liquid Interface	Ofoli, R.
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.

PROJECTS

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.
MICL01887*	Enhancing Food Safety Through Control of Food-Borne Disease Agents	Linz, J.
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.
MICL03363	Food Industry Institute	Hegarty, P.
MICL03371	Targeting Michigan Groups at Nutritional Health Risk: Identifying Needs, Intervention Strategies and Outcomes	Bond, J.
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.
MICL08196	Recombinant Antibodies for Natural Toxicants	Pestka, J.
MICL08239	Function of Vitamin A in Quail Embryogenesis	Zile, M.

Forestry

Phone: 355-0091



Daniel E. Keathley,
Chair

FACULTY

	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
Dickmann, Donald I.	12	0.70	0.00	0.30	Fire Ecology, Silviculture
Epperson, Bryan K.	13	0.70	0.00	0.30	Forest Genetics
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
Ramm, Carl W.	13	0.60	0.00	0.40	Forest Biometrics
Rothstein, David E.	14	0.60	0.00	0.40	Woody Plant Nutrition
Walters, Michael B. ⁶	14	0.75	0.20	0.05	Forest Ecology
Yin, Runsheng	14	0.70	0.00	0.30	Forest Resource Economist
TOTALS:		6.95	1.60	4.45	
<i>Adjustment for PERM Positions</i>		<i>-0.75</i>	<i>-0.20</i>	<i>-0.05</i>	
ADJUSTED TOTALS		6.20	1.40	4.40	

Forestry (continued)

PROJECTS

MICL01693*	The National Atmospheric Deposition Program (NADP)	Kobe, R.
MICL01748	Economic Analysis of Forest Management Opportunities in Michigan	Potter-Witter, K.
MICL01773	Testing Lake States TWIGS: Five- and Ten-Year Growth Projections for Upland Hardwoods	Ramm, C.
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 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.
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.

Geography

Phone: 355-4649



Richard E. Groop, Chair

FACULTY

	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
Skole, David L.	12	0.18	0.00	0.82	Land Use and Land Cover Change
TOTALS:		0.18	0.00	0.82	

PROJECTS

MICL03373	Impacts of Weather and Climate on Michigan Agriculture	Andresen, J.
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Horticulture

Phone: 355-5191



Wayne H. Loesch, Chair

FACULTY

	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
Beaudry, Randolph M.	13	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
Edson, Charles E.	13	0.25	0.00	0.75	Integrated Crop Management

	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
Fernandez, Rodney T.	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
Herner, Robert C.	12	0.35	0.00	0.65	Postharvest Physiology/Vegetable Crop
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
Perry, Ronald L.	12	0.50	0.50	0.00	Pomology/Rootstocks
Rowe, D. Bradley	14	0.25	0.00	0.75	Landscape Horticulture
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	Vegetables/Integrated Crop Management
van Nocker, Steven R.	14	0.75	0.00	0.25	Reproductive Development/Genetics
Widders, Irvin E.	12	0.67	0.00	0.33	Vegetable Physiology
Zabadal, Thomas J.	13	0.50	0.50	0.00	Viticulture
Zandstra, Bernard H.	12	0.25	0.75	0.00	Vegetable Crops
TOTALS:		15.82	4.80	9.38	

PROJECTS

MICL01155*	Postharvest Physiology of Fruits	Dilley, D.
MICL01222*	Plant Germ Plasm 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.
MICL01468	Role of Ion Flux and Compartmentation in the Transduction of Environmentally Elicited Signals	Widders, I.
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 Crops	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.
MICL01846	Tomato Ripening Mutants	Herner, R.

Horticulture (continued)

PROJECTS

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.
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	van Nocker, S.
MICL07622	Safeguarding the Supply of Specialty Crops for Consumers	Flore, J.
MICL07632	Safeguarding the Supply of Specialty Crops for Consumers	Hanson, E.
MICL07654	Bioprocessing for Utilization of Agricultural Raw Materials	Nair, M.
MICL08202	Relationship Between Genetic and Hormonal Control of Sex Expression in Cucumis Species	Grumet, R.
MICL08250	Cultural and Biological Alternatives to Methyl Bromide Fumigation of Strawberries	Hancock, J.
MICL09010	Epigenetic Mechanisms and Changes in Gene Expression Associated with Flowering	van Nocker, S.

Human Environment & Design

Phone: 355-7712



Dana G. Stewart, 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 Foods in India: Consumer Demand and Distribution Systems	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.
MICL08209	The Food Retailing Industry in People's Republic of China: A Comparison of Behavioral Relationships	Sternquist, B.

Integrated Plant Systems (Center for)

Phone: 353-9430



L. Patrick Hart, Acting Director

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	

MICL07634 Michigan Commodity and Pest Management Profiles

Whalon, M.

Kellogg Biological Station

Phone: 616-671-5117



Michael J. Klug, Director

FACULTY

	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
Bush, Guy L.	12	0.10	0.00	0.90	Genetics
TOTALS:		0.10	0.00	0.90	

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.	13	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* Bovine Respiratory Disease: Risk Factors, Pathogens, Diagnosis and Management

Baker, J.

MICL01688* Mastitis Resistance to Enhance Dairy Food Safety

Erskine, R.

Large Animal Clinical Sciences (continued)

PROJECTS

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	Herdt, T.
MICL01820	Assessment and Control of Enteric Pathogens Among Neonatal Calves	Holland, R.
MICL01898*	A National Agricultural Program to Approve Animal Drugs for Minor Species and Uses	Holland, R.
MICL01916	Diagnosis and Prevention of Bovine Viral Diarrhea Virus (BVDV)	Grooms, D.
MICL01917	Bovine Respiratory Disease: Risk Factors, Immunology, Pathogenesis and Control	Baker, J.
MICL01934	Control of Swine Respiratory Disease: Alternatives to the Use of Prophylactic Antibiotics	Duran, C.
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.
MICL06894	Development of a Live Attenuated Vaccine Against <i>Haemophilus parasuis</i>	Duran, C.
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.
MICL07630	Minor Use Animal Drug Program – North Central Region	Holland, R.
MICL07637	Minor Use Animal Drug Program – North Central Region	Holland, R.
MICL07655	A National Agricultural Program to Approve Animal Drugs for Minor Species and Uses	Holland, R.
MICL08227	Mucus Secretion and Clearability in Equine COPD	Robinson, R.

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
de Bruijn, Frans J.	12	0.38	0.00	0.62	Molecular Biology
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
Velicer, Leland F.	12	0.30	0.00	0.70	Virology
TOTALS:		4.50	0.00	8.50	

Microbiology (continued)

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.
MICL01628	Analysis of the Genes of Marek's Disease Herpesvirus and the Proteins They Encode	Velicer, L.
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.
MICL08199	Chicken Genome Mapping Using AFLP and Anchor STS Markers	Dodgson, J.
MICL08213	Structural and Mechanistic Analyses of Urease and Allantoinase	Hausinger, R.
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.

National Food Safety & Toxicology Center

Phone: 432-3100



Edward C. Mather, Acting 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

MICL01730*	A National Agricultural Program to Clear Pest Control Agents for Minor Uses	Hollingworth, R.
MICL01919	Fates and Effects of Potential Endocrine Modulating Compounds in the Environment	Giesy, J.
MICL03364	Improved Microbial Food Safety Through Risk Assessment, Management, Communication and Analysis	Mather, E.
MICL07629	Minor Use Animal Drug Program – Headquarters	Hollingworth, R.
MICL07635	NC Region IR-4 Leader Lab Program to Clear Pest Control Agents for Minor Uses	Hollingworth, R.
MICL08228	Anti-Oxidant, Anti-Inflammatory and Anti-Cancer Compounds from Tart Cherries	Nair, M.

Packaging

Phone: 355-9580



Stock Photo



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
Giacin, Jack R.	12	0.59	0.00	0.41	Package Product Interaction
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:		1.94	0.00	4.06	

PROJECTS

MICL01520	Transport Properties of Polymer Films as Related to Quality and Storage Stability of Packaged Products	Giacin, J.
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.
MICL01840	Controlled Atmosphere and Modified Atmosphere Packaging of Fresh Produce	Lee, J.
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/Planning/Economics
Stynes, Daniel J.	12	0.50	0.00	0.50	System Analysis/Research Methods/Economics
Vander Stoep, Gail A.	13	0.25	0.25	0.50	Communications/Human Dimensions
TOTALS:		2.25	0.50	2.25	

Park, Recreation & Tourism Resources (continued)

PROJECTS

MICL01763	Influences of Natural Resource Recreation on Land Management	Nelson, C.
MICL01766	Social Science and Communications in Outdoor Recreation Resource Management	Vander Stoep, G.
MICL01903	Extent and Role of Participation and Choice in Outdoor Recreation Planning and Management	Propst, D.
MICL03280	Travel, Tourism and Recreation Resource Center	Holecek, D.
MICL03362	Economic Impacts of Recreational Tourism	Stynes, D.
MICL09008	Development of Nationally Representative Visitor Spending Profiles	Propst, D.
MICL09009	Corps of Engineers Marina User/Dock Owner Expenditure Study	Propst, D.

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 Research Lab (MSU-DOE)

Phone: 353-2270



Kenneth Keegstra,
Director

FACULTY

	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
de Bruijn, Frans J.	12	0.38	0.00	0.62	Molecular Biology
He, Sheng-Yang	14	0.25	0.00	0.75	Molecular Biology/Plant Pathogen Interaction
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:		1.09	0.00	2.91	

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.

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 and Management
Bingen, R. James	13	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	0.15	0.60	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.	13	0.30	0.00	0.70	Natural Resources Management
TOTALS:		3.53	1.10	5.37	

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.
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.

Sociology

Phone: 355-6640



Thomas L. Conner, Chair

FACULTY

	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
Aronoff, Marilyn B.	13	0.25	0.00	0.75	Rural Communities/Environment
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
Vanderpool, Christopher K.	12	0.20	0.20	0.60	Environmental & Food Safety
TOTALS:		2.22	0.20	3.58	

PROJECTS

MICL01612	Strategic Analysis of Technical Change in Commodity Subsectors	Busch, L.
MICL01751*	Rural Labor Markets in the Global Economy	Bokemeier, J.

Sociology (continued)

PROJECTS

MICL01829*	Rural Restructuring: Causes and Consequences of Globalized Agricultural and Natural Resource Systems	Harris, C.
MICL01842*	Commodities, Consumers, and Communities: Local Food Systems in a Globalizing Environment	Busch, L.
MICL01864	Rural Family Ties and Well-Being: Social Capital, Community Context and Household Strategies	Bokemeier, J.
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 System	Harris, C.
MICL01939	Community Responses to Hazardous Waste Crises: Alternatives to Increased Public Involvement	Aronoff, M.
MICL01950	Regional Agricultures, Landscapes and Ecologies	Rudy, A.

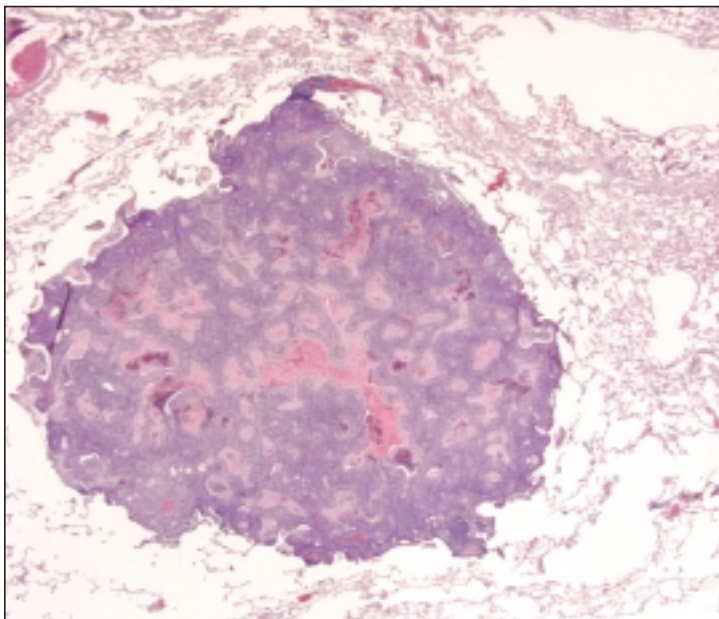


Photo by Amy Usborne, DVM, DACVP

Veterinary Pathology

Phone: 432-4680



Willie M. 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 R.	12	0.31	0.00	0.69	Toxicology
Padgett, George A.	12	0.25	0.00	0.75	Comparative Veterinary Pathology
Patterson, Jon S.	13	0.25	0.00	0.75	Veterinary Pathology/Infectious Disease/Animals
TOTALS:		1.50	0.00	4.50	

PROJECTS

MICL01720	Immunohistochemical Diagnosis of Infectious Diseases	Patterson, J.
MICL01776	Effects of Endotoxin and Other Organic Dust Constituents on Airway Mucous Cells	Harkema, J.
MICL01847	Osteochondrosis: Development of Procedures to Control or Mitigate the Effects of This Disease	Padgett, G.
MICL01882	Molecular Aspects of Marek's Disease Virus Oncogenicity	Holland, M.
MICL01958*	Avian Respiratory Diseases: Pathogenesis, Surveillance, Diagnosis and Control	Reed, W.
MICL06882	Hemorrhagic Disorder in Noncytopathic Type II Bovine Virus Diarrhea Viral Infection	Bell, T.



Water Research (Institute of)

Phone: 353-3744



Jon F. Bartholic, Director

FACULTY					
	RANK	MAES	MSUE	JOINT	AREA OF INTEREST
D'Itri, Frank M.	12	0.10	0.00	0.90	Environmental Chemistry
TOTALS:		0.10	0.00	0.90	

Faculty Appointments

	MAES	MSUE	JOINT
GRAND TOTALS	134.25	45.84	138.41

¹Elton Smith Endowed Chair

²C.S. Mott Distinguished Professor of Sustainable Agriculture

³Hannah Professor for Microbial Ecology and Plant Sciences

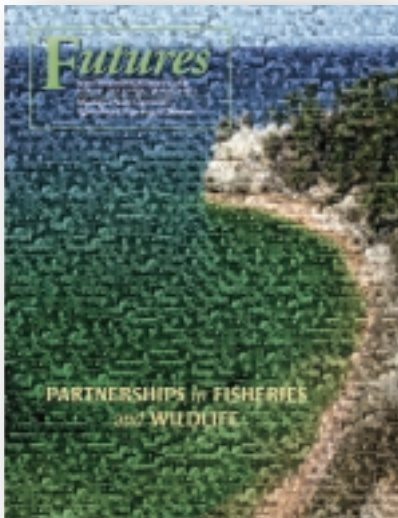
⁴Nowlin Professor for Water Research (50 percent of the appointment is paid by the endowment)

⁵Clinton Meadows Chair

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

Futures is the quarterly 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>.

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In 1623, English metaphysical poet John Donne wrote “No man is an island, entire of itself” in his work “Devotions.” Three hundred and seventy-seven years later, it is still one of the best expressions to describe the research done by many MAES scientists, particularly in the areas of fisheries, wildlife, forestry, and park,

recreation and tourism resources. MAES researchers do not work in a vacuum — the results of their studies are used by various groups of people who apply them to real-world situations and problems. Because of this, scientists must be up-to-date on the latest research techniques as well as the current needs of industries, commodity groups, government agencies, citizen groups and consumers. In this issue of *Futures*, we highlight some of the partnerships and research going on in these areas.

On Earth Day in 1993, MSU’s College of Agriculture and Natural Resources and the Michigan Department of Natural Resources (DNR) signed a joint operating agreement called the Partnership for Ecosystem Research and Management (PERM). Originally a partnership between MSU and the Fisheries and Wildlife divisions of the DNR, PERM has expanded to include the DNR Forestry Management Division, the Great Lakes Fishery Commission and the Great Lakes Science Center, which is part of the U.S. Geological Survey. PERM scientists are employed by the university but maintain strong ties to the other partners. Both MSU and the DNR realized that resource management was moving toward management on a larger, ecosystem scale rather than species by species. More information was needed to manage at this level, and the PERM program has opened the door for new research and makes it possible for the results to be distributed quickly and efficiently.

PERM is one of several strong partnership programs between MSU and other groups. Twenty-five years ago, Michigan State University joined with the University of Michigan to create Michigan Sea Grant, a research and outreach program focusing on the Great Lakes. Since the early 1970s, researchers from both institutions had been participating in the national Sea

Grant program. The 29 Sea Grant programs in all the coastal states form a network that deals with marine and Great Lakes issues. Initially, U of M administered the Sea Grant program in Michigan, but it soon became clear that working with MSU Extension would be critical to the program’s success. A few years after implementation, Michigan Sea Grant was awarded “college” status, which is given to programs that have demonstrated their success over a sustained period of time.

Michigan has the largest number of registered watercraft in the United States, and revenue generated by boaters is a significant portion of the state’s tourism economy. To help communities assess the impact of boating and marinas and to help the industry plan for the future, MAES scientists are working with these groups to perform annual surveys of marinas and registered boaters, as well as study the impact of low water levels on the state. The information is collected and analyzed and then put in a format that is most useful to all the interested groups.

Michigan has turned more than 90 abandoned railway corridors into trailways for use by bikers, hikers, in-line skaters and people involved in other non-motorized activities. MAES researchers are working with the Michigan Department of Transportation, the DNR, the National Park Service and the Rails to Trails Conservancy in Michigan to study the Pere Marquette Rail Trail in Midland, Mich., to document the usage levels of the trail, describe users, investigate the opinions of area residents about the trail and look at the economic benefits of turning railways into trailways. This is the first comprehensive study to evaluate the effects of rails-to-trails projects on the community.

MAES researchers are also working with state agencies and private organizations to study salvaging and cataloging underwater shipwrecks and the dynamics of the forest ecosystem. In all instances, the ultimate aim of the research is to get pertinent information into the hands of the people that need it most in a timely, efficient manner.

The name “Michigan Agricultural Experiment Station” leads many to believe that the MAES focuses strictly on the issues surrounding production agriculture. But fisheries, wildlife and natural resources research has always been a large and important component of MAES research. We hope this issue of *Futures* helps illuminate some of these areas.

We invite you to send us your comments about *Futures*. Address correspondence to *Futures* Editor, 312 Agriculture Hall, East Lansing, MI 48824-1039, or send an e-mail note to maesdir@msu.edu.

MAES Contributors

July 1, 1999 to June 30, 2000

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 Michigan Cherry Committee



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 Michigan Department of Agriculture
 Michigan Department of Environmental Quality
 Michigan Department of Natural Resources
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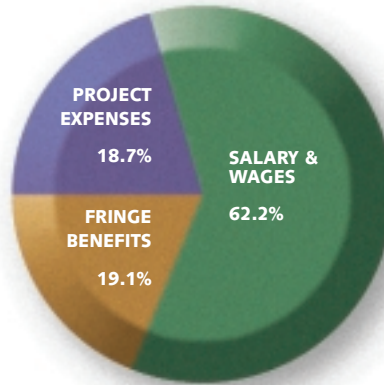
Michigan Forestry & Park Association
 Michigan Hay & Grazing Council
 Michigan Herb Associates
 Michigan Nursery & Landscape Association
 Michigan Nut Growers Association
 Michigan Onion Committee
 Michigan Pear Research Association
 Michigan Potato Industry Commission
 Michigan Sea Grant College Program
 Michigan Soybean Promotion Committee
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Toro Company	
TruGreen-ChemLawn	

Financial Report

July 1, 1999 to June 30, 2000

DISTRIBUTION OF APPROPRIATED FUNDS



INCOME:

\$72,087,089

Federal Appropriations	\$5,160,846
Hatch	\$ 3,937,753
McIntire-Stennis	\$ 208,773
Hatch RRF	\$ 935,436
Hatch Animal and Disease, Section 1433	\$ 78,884
State Appropriations	\$31,497,154
TOTAL APPROPRIATIONS:	\$36,658,000
Grants — Federal, State and Private	\$35,429,089

EXPENSES:

\$72,087,089

Salaries	\$22,808,537
Fringe Benefits	\$ 6,999,495
Project Expenses	\$ 6,849,978
Grants — Federal, State and Private*	\$35,429,089

Personnel

(Full-time Equivalents Funded From Appropriated Funds)

Research Staff**	155.34
Professors	73.67
Associate Professors	27.96
Assistant Professors	27.17
Research Associates and Specialists	26.54
Support Staff	158.63
Administrative Professionals	79.97
Supervisors	24.94
Clerical	41.10
Technicians	12.62

* Grants are reported using most recent three-year average

** Does not include department chairpersons/unit administrators

MICHIGAN AGRICULTURAL EXPERIMENT STATION

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Michigan State University

East Lansing, Michigan 48824-1039



SR-119, April 2001

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