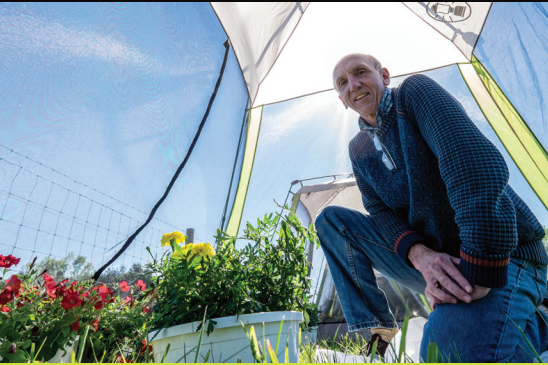


Abundant food supply requires bees and other pollinators

MSU Entomology addresses the multi-prong challenge of pollinator health.



Dave Smitley is working with Michigan's \$600 million nursery and greenhouse industry to develop integrated pest management practices that produce plants for sale with blooms safe for bees.



Rufus Isaacs is leading a team with \$8.6 million from the USDA to develop recommendations for fruit and vegetable growers that will harness the potential of pollinators for sustainable pollination.



Meghan Milbrath coordinates the new Michigan Pollinator Initiative. Her role is to integrate the network of researchers, Extension staff, policy makers, land managers, growers and beekeepers working to better protect pollinators.

Bees are responsible for one out of every three bites of food we eat and contribute to the yield of 70 percent of the world's crops. Michigan is a national leader in growing crops requiring pollination by insects (blueberries, tart cherries, squash and cucumbers) and provides significant production of others such as apples and tomatoes. Our state's beekeepers provide pollinating services to agriculture and gather about 5 million pounds of honey annually, worth over \$10 million.

Pollinating insects also play a critical role in maintaining natural plant communities by ensuring seed production in most flowering plants. Bees are the main pollinators of wild plants and crops, pollinating plants in farms, gardens and natural areas. While European honey bees are the best known pollinators, there are over 400 bee species found in Michigan, along with many other pollinators such as butterflies, flies and bats.

Wild and managed bees have declined as many stresses have combined to reduce their numbers and caused concern for how crops will be pollinated. One important stressor is changes in land use, resulting in decreased availability of food and nesting resources for bees. Other factors include parasites, diseases and pesticides.

What is MSU Entomology doing?

We collaborate with beekeepers, growers, land managers and other stakeholders to ensure the most pressing issues are addressed and insights are shared. MSU entomologists are investigating many factors that currently affect bee health in agricultural, urban and natural areas. Faculty, students and staff are:

- Working to develop safe and effective Integrated Pest Management (IPM) systems that reduce the need for pesticides.
- Studying honey bee health by examining the impacts of pathogens and parasites such as Varroa mite and interactions with other stressors.
- Investigating how to create habitats using nectar and pollen-producing plants around farms, gardens and urban areas that support wild and managed pollinators and expand bee foraging.
- Determining how land use changes affect honey bee nutritional status and health.
- Working with the USDA, state agencies, and colleagues to develop best management plans that help farmers control pests while protecting pollinators.

More online:

Michigan Pollinator Initiative: pollinators.msu.edu

Integrated Crop Pollination Project: www.projecticp.org



The **Michigan State University Department of Entomology** excels in research, extension and teaching to address the issues that confront the people of Michigan, our nation and the world.

MSU's entomologists look for systemic solutions across disciplines to address critical issues related to health, natural resources, food production and more.

People

275 faculty, staff, students



9

MSU Distinguished faculty

Teaching

1,400



undergrads take an entomology course each year

Students from
15 countries
since 2009



Research

Multi-year grants with continuous funding (years = length of commitment):

- 15 years National Institutes of Health
- 10 years Bill/Melinda Gates Foundation
- 9 years National Science Foundation
- 10 years U.S. Agency for International Development
- 8 years U.S. Department of Energy
- Continuous funding from USDA including 5 year SCRI

\$10 million annual research expenditures



Outreach & Extension

5,000

visitors to the Bug House each year



\$1.4 million

increased Michigan fruit sales for growers using MSU Enviro-weather's online pest/crop decision tools

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Proud to be a part of: AgBioResearch, MSU Extension, the College of Agriculture and Natural Resources, the College of Natural Science.