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Researchers Aim to Conserve Bees for Michigan Berry Growers

Project Title: Effects of Pest Management and Conservation Plantings of Bee Communities in Highbush Blueberry

Coordinator: Emily May

Location: Michigan State University, Lansing, MI

SARE Grant: \$9,962

Duration: 2013-2014

To read the full project report, go to www.sare.org/projects and search for project number GNC13-177.



With SARE support, graduate student Emily May studied bee communities in highbush blueberries in Michigan. Photo by Clara Stuligross.

When developing risk management strategies, more and more farmers are concerned with native bee habitat preservation. We know that 70 percent of the world's flowering plants, including more than two-thirds of the world's crop species, rely on pollinators to reproduce. In a state that leads nationwide production of blueberries and tart cherries, researchers at the Berry Crops Entomology lab at Michigan State University (MSU) are working on basic questions about insect ecology and management that have practical applications for berry growers.

Emily May is a Pollinator Conservation Specialist for the Xerces Society for

Invertebrate Conservation. She is also a recent graduate of MSU, where she did Master's degree work examining the threats to the bees that highbush blueberry growers need, including habitat loss and exposure to pesticides. In 2013, May applied for and received a \$9,962 NCR-SARE Graduate Student grant to study bee communities in highbush blueberries.

“Previous work in our lab had established that the wild bee communities around blueberry fields in southwest Michigan are diverse (over 100 species of bees present during bloom) and have the potential to respond well to conservation-oriented management such as the installation of wildflower plantings,” said May. “For this project, we wanted to look at the interactive effects of resources and stressors to determine the best management strategies for conserving wild bee communities on blueberry farms.”

With the SARE funds, May was able to assess how the intensity of insecticide applications affects native bees foraging on highbush blueberry, to determine the effects of wildflower plantings on soil-nesting bee communities, and to develop educational resources on how to minimize the effects of pest management activities on beneficial insects.

Insecticide Risk

May's results suggest that the intensity of insecticide use in highbush blueberry can affect the biodiversity of wild bee communities living in and around blueberry fields.

“It is possible that the bees driving the decline in species richness at sites with higher insecticide use are rare species that are not associated with blueberry pollination,” said May. “Once we know more about which species are most at risk, we can develop better strategies for conserving bees on farms with intensive pest management practices.”

Soil-Nesting Bee Communities

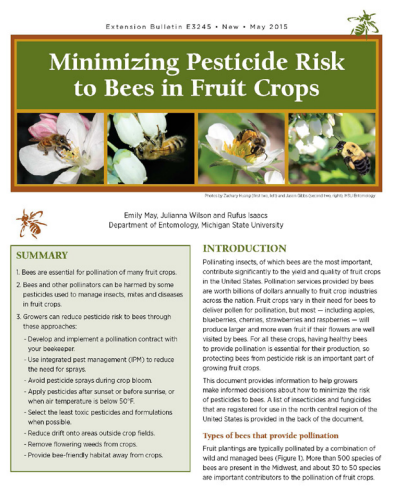
May said that the research team was particularly excited about the results of their bee nesting work, since the locations of bees that nest belowground are inherently difficult to find. With two seasons of fieldwork,

they found more bees nesting in the soil in wildflower plantings on blueberry farms than in other habitats around the farms.

“This study complements previous work by showing that bees preferentially nest in these undisturbed wildflower patches, indicating that planting wildflowers may be providing bees with two limiting resources in these landscapes: food and nesting sites,” said May. “The results are promising, though further work is needed to assess the true density of bees per square meter across the duration of the growing season.”

Educational Resources

Approximately 100 farmers attended presentations related to May's project. She said they have also reached about 500 farmers through outreach materials, including a 16-page Extension bulletin called “Minimizing Pesticide Risk to Bees in Fruit Crops.”



Minimizing Pesticide Risk to Bees in Fruit Crops provides information to help growers make informed decisions about how to minimize the risk of pesticides to bees. A list of insecticides and fungicides that are registered for use in the North Central region of the United States is provided in the back of the document. Read it for free at [http://msue.anr.msu.edu/uploads/resources/pdfs/Minimizing_Pesticide_Risk_to_Bees_in_Fruit_Crops_\(E3245\).pdf](http://msue.anr.msu.edu/uploads/resources/pdfs/Minimizing_Pesticide_Risk_to_Bees_in_Fruit_Crops_(E3245).pdf)

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