

Profile from the Field

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Overwintering Bees for Increased Apiary Sustainability

Project Title: Improving Apiary Sustainability by Using an Overwintered Nuc System for Colony Replacement and Expansion Instead of Purchased Package Bees

Coordinator: Meghan Milbrath

Location: Michigan

SARE Grant: \$7,492

Duration: 2015-2017

To read the full project report, go to <https://projects.sare.org/search-projects/> and search for project number FNC15-1005



Meghan Milbrath has experimented with various methods for overwintering bees, and has reduced her number of colonies lost in the winter. Photo by Meghan Milbrath.

Our \$20-billion-a-year crop industry relies on insect pollination, but diseases, pests, and colony collapse disorder are knocking out 30 percent of beekeepers' colonies every growing season. There are as many as 125,000 beekeepers in the country. And while 2.77 million honey-producing colonies generated 161.8 million pounds of raw honey in 2016, the annual value of direct honeybee pollination to U.S. agriculture was estimated at over \$20 billion, which exceeded the value of wax and honey sales (AgMRC 2018).

Meghan Milbrath started keeping honeybees as a child alongside her father. She kept bees through

graduate school and even started to raise bees to earn a little extra money. Today, Milbrath is an academic specialist in Michigan State University's (MSU) Department of Entomology and is the coordinator of the Michigan Pollinator initiative, a program started at MSU to address concerns related to pollinators and pollination. She also operates her own beekeeping business, The Sandhill Apiary in Munith, Michigan.

"When I started keeping bees with my dad in the early 90s, our bees didn't die in the winter," said Milbrath. "You would have occasional disease or pesticide kills, but overall it was fun and easy. When I started raising

bees again in 2010, it was an entirely different story—the bees were making less honey, it was a lot more work, and my colonies kept dying.”

Milbrath has devoted decades of her life learning about the new pests and pathogens affecting honeybees. And while there are many threats facing bees today, Milbrath says one of the biggest issues facing beekeepers is the high rate of winter loss.

“Currently, beekeepers lose 30-65% of their colonies each winter,” said Milbrath. “Beekeepers generally replace these colonies lost in winter by purchasing packages of bees in the spring. Package prices have gone up considerably, making this system financially unsustainable to many beekeeping operations.”

In 2015, Milbrath received a \$7,492 NCR-SARE Farmer Rancher grant to examine the key variables that affect overwintering nucs, and to develop a system that could be used by other beekeepers to overwinter their bees. The term “nucs” is short for “nucleus colony,” which is a smaller colony created from a larger honeybee colony. Milbrath wanted to identify successful options for wintering smaller colonies by using a large colony to produce many smaller colonies that could either be used to replace winter losses or put toward an apiary expansion. The basis of her method was the use of late season splits. This means splitting colonies after the year’s main honey flow as a way to increase the overall number of colonies.

“Not only does a system of late season splits allow for the production of replacement colonies, but it also has benefits that improve colony survival. It does this through both the reduction of disease and a focus on younger and better queens,” explained Milbrath. Milbrath said there are many different methods for overwintering splits and small nucs that can be used to make up losses in honeybees. While she didn’t find a “magical overwintering recipe” that works for everyone in all years, she tried four different methods, and was able to optimize each of them for different needs.

“I see a lot of beekeepers who lose a lot of bees in the first years, and they get disheartened and give up,” said Milbrath. “Working with methods, such as overwintering, that allow people to reduce costs, means more beekeepers can be successful. Beekeepers may

take a year or two to optimize for their operation and location, but have many options to make up replacement colonies, and avoid the high cost of replacing bees each year.”

See her comparisons of various methods and read more about Milbrath’s NCR-SARE Farmer Rancher grant on the SARE project reporting website. Simply search by the project number FNC15-1005 at <https://projects.sare.org/search-projects/>, or contact the NCR-SARE office for more information.

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