STEPHEN AUSMUS (K10288-6)

Honey bees devour a new, nutrient-rich artificial diet, the result of 5 years of research.

MegaBee: New Food for America's Beleaguered Honey Bees

Just like people, bees that show up for work well-rested and well-fed have a better shot at doing good work than if they're tired and not eating right. That's true no matter what the bee's work is, from indoor chores like tending the next generation, called "brood," to outdoor gigs like gathering edibles—nectar and pollen—from flowers.

Beekeepers now have a new product to choose from when they want to make sure their bees won't run out of food. Called "MegaBee: The Tucson Diet," this whitish-tan powder is rich in proteins. It can be easily mixed with the sugar syrup that's already beekeepers' standard source of energizing carbohydrates for busy bees.

Or, MegaBee can be mixed with a small amount of syrup, pressed into patties, and placed in the hives for convenient snacking.

Discovering more about bees' everyday nutrition needs is a top priority for honey bee expert and research leader Gloria DeGrandi-Hoffman and colleagues at the ARS Carl Hayden Bee Research Center in Tucson, Arizona. That's why DeGrandi-Hoffman structured a cooperative research agreement with entomologist Gordon I. Wardell of Tucson-based S.A.F.E. (Sensible Alternatives for the Environment) R&D, LLC. Wardell and co-investigator Fabiana Ahumada-Segura tested nearly 1,000 different combinations of amino acids—the building blocks of proteins—before selecting the best formulation, giving it the MegaBee moniker, and getting it to market in 2007.

This culinary offering had proved successful in a study of several million honey bees hived in a bee yard just outside of Bakersfield, California. The bees were awaiting work in the state's vast almond orchards.

The study showed that bees ate MegaBee at about the same rate as they ate natural pollen—but helped produce more brood than did their pollen-fed counterparts. "It takes a healthy hive of robust worker bees—not just an egg-laying queen—to produce lots of brood," explains DeGrandi-Hoffman. "Worker bees feed the brood, and the quality of that food affects the health of the young."

The experiment paved the way for followup tests beginning in the fall of 2007, also at the same bee yard in California. Future plans call for other tests to determine whether bees living and working in other parts of the country will also thrive on this new, science-based food.

MegaBee might be especially useful as a late-fall and early-winter nutrition boost for bees, a time when colonies typically enter a low ebb.

But why fight these natural winter doldrums?

Big, bustling colonies of healthy, active bees are needed unseasonably early—that is, in late January or early February—in California to pollinate the millions of almond blossoms that burst into bloom at that time of year.

Abundance of many of the foods we most enjoy—not just almonds but also apples, blueberries, cherries, and more—depends on proficient pollinators, like honey bees. Everyone benefits when research—such as the studies that led to MegaBee—helps hardworking honey bees live long and well.—By **Marcia Wood,** ARS.

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