

University of Georgia given \$4.1 million USDA grant to study disappearing bees

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By April Sorrow, University of Georgia

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“Our long-term goal is to restore large and diverse populations of managed bee pollinators across the U.S. to sustain natural and agricultural plant communities,” said Keith Delaplane, an entomologist with the UGA College of Agricultural and Environmental Sciences. Delaplane will direct the four-year Coordinated Agriculture Project (CAP) that is part of a National Research Initiative funded through the USDA Cooperative State Research, Education and Extension Service.

A multidisciplinary team of researchers and extension specialists representing 17 states will be working on the project. The 19-member team will include specialists in epidemiology, virology, pathology, ecology, toxicology, bee biology, apiculture and integrated pest management.

The team will study colony collapse disorder. First identified in November 2006, CCD expresses itself in bee colonies where foragers have abandoned the nest. This leaves behind large quantities of untended young bees and honey.

Normally, weakened colonies are robbed clean by neighboring bees. When a colony is decimated by CCD the untended honey may remain untouched.

Scientists believe a combination of factors contribute to the phenomenon including pesticide exposure, environmental and nutritional stresses, new or reemerging pathogens and a new virus that targets the bees' immune systems.

“At this point it’s more forensic science than experimental science,” Delaplane said. “We have a set of symptoms but we don’t understand cause and effect.”

Initial research will focus on determining which of the factors are contributing causes of CCD, either individually or in combination.

“We are trying to look at CCD from every angle, address it with research and deliver the knowledge to clientele groups who need answers,” he said. “Expectations are high.”

After research is complete, the research team hopes to have some practical answers for beekeepers and growers of crops that rely on bees for pollination. Plans include developing best management practice guides, breeding strains of bees with genetic resistance to parasites and pathogens, improving the regulatory framework for better protection against pathogens, pests and parasites and creating Web-based distribution of science-based information on bee health and CCD. They are also laying the groundwork for a bee stock registry.

Honeybees pollinate about a third of the nation’s food supply and add \$15 billion annually to U.S. crops. They pollinate 130 different fruits, vegetables and nuts including almonds, apples, avocados, blackberries, blueberries, broccoli, carrots, cherries, cucumbers, onions, peaches and soybeans.

Although they are an essential part of crop production, the impact of the honeybee pollination on human beings is not a matter of life or death, Delaplane said.

“More human calories are supplied by wind-pollinated cereals like wheat and rice,” he said. “However, when economies improve we

see an increase in the consumption of meat and dairy products and bee-pollinated fruits like melons and berries.”

A comparative example is the difference in U.S. diets and those in countries like Sudan, he said. “That difference is largely explained by bee-pollinated crops,” he said.

While there are other bee pollinators, honeybees are the most prolific and easiest to manage for the large scale pollination the agriculture industry requires. In California, the almond crop alone needs 1.3 million bee colonies, about half of all honey bees in the country.

The number of managed bee colonies has dropped from five million in the 1940s to half that number today. To meet demand, commercial beekeepers truck bees to provide pollination services.

In addition to UGA, the institutions participating in the grant project are Connecticut Agricultural Experiment Station, Cornell University, Illinois Natural History Survey, North Carolina State University, Kentucky State University, Michigan State University, Penn State University, Purdue University, University of California–Riverside, University of Maine, University of Massachusetts, University of Minnesota, University of Nebraska, University of Tennessee, USDA ARS Weslaco, Texas and Washington State University.

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