Bees: Steep population loss hits agriculture hard

By Ngoc Nguyen - ngnguyen@sacbee.com
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THE ISSUE Colony collapse disorder continues to vex researchers and decimate beehives. At stake is the routine pollination of many farm crops by honeybees. More than half of the nation's 2.4 million bee colonies each year pollinate California's almond crop.

Bob Koehnen, a beekeeper and farmer in the small Sacramento Valley town of Glenn, has a big worry.

Koehnen normally puts his 15,000 beehives to work in his orchards, pollinating 3,000 acres of walnuts and almonds. This year he faces the prospect of hiring beekeepers whose prices will jump because of a nationwide decline in honeybees.

Many adult bees have mysteriously disappeared – leaving only the queen and the young brood bees – and researchers don't yet know exactly why. But Koehnen hopes they figure it out soon.

"As a grower, you want a healthy beekeeping industry, he said. "Almonds are dependent on pollinators."

Of the 2.4 million bee colonies in the United States, the almond crop in California alone requires more than half, according to federal farm officials. Amid this need, what's called CCD – colony collapse disorder – has resulted in a loss of 50 percent to 90 percent of beehives in the United States.

Koehnen and about 1,500 other farmers and beekeepers from around the nation are in Sacramento this week for the first National Beekeeping Conference. The priority of almost everyone at the conference is hearing scientists discuss the latest clues in the CCD mystery.

The perplexing malady will be the main topic of discussion during today's conference sessions, at the DoubleTree Inn in Sacramento.

At the forefront of everyone's mind this week is the "health of bees," said Jackie Park-Burris, a queen bee breeder from Palo Cedro and president of the California State Beekeepers Association.

The evidence today is pointing to the effects of a complex chain of factors: pesticides, viruses and fungi and parasites such as mites.

"It's what Mom told us: Eat right. Keep your environment clean. And don't take drugs," said Diana Cox-Foster, an entomologist at Penn State University.

The stakes are high, but a year after colony collapse appeared, there are still more questions than answers. For example: Why now, after years of exposure to farm chemicals, mites and diseases, are bees succumbing in big numbers?

"As a research community, we're just scrambling," said Susan Cobey, a UC Davis researcher and bee breeder.

In 2007 Davis experts, university and government researchers, and beekeepers nationwide collected samples of affected hives. Initial studies found that most of the collapsed colonies were also hit by Israeli acute paralysis virus.

Now they're injecting that virus into healthy bees to see the result.

But the virus is not the only possible culprit. Researchers this week said it is most likely an interplay of different viruses with mites and pesticides.

But all that still doesn't explain where the tiny bee corpses have gone.

One clue: Pesticides can work at a "sub-lethal" level that doesn't cause death but other serious problems, said Maryann Frazier, an entomologist at Penn State.

A new class of pesticides called neonicotinoids are neurotoxins that can affect the bee's immune system and ability to navigate, she said.

For the Hiatt family of Fresno, beekeeping is a 40-year livelihood and way of life. Their experience has helped them weather the colony collapse storm.

Brothers Chris and Bryan Hiatt of Hiatt Honey saw half their bee colonies die off from a mite outbreak in 2004. They now use a creative pesticide mix to control mites.

Chris Hiatt said he rotates use of two chemicals – a conventional pesticide and an organic alternative. This prevents mites from building resistance to one chemical, Hiatt said.

"It's organic and leaves no residue in the (bees) wax," Hiatt said.

Bryan said it comes down to bees needing more care and attention these days.

"It used to be you could close the lid in October and open it in June," he said. "Now, they'd be dead."

Bryan said he now spends extra time to ensure the stock is hearty, well-nourished and given pollen supplements.

In the spring, it will be time for worker bees to get busy.

Honeybees are used throughout the country to pollinate hundreds of crops, from apples and almonds to soybeans and strawberries. According to the U.S. Department of Agriculture, about $15 billion in crops are pollinated by honeybees.

Bee researchers are looking to breed stronger, cleaner bees as a possible answer to colony collapse.

Cobey said beekeepers face a "balancing act."

"It's possible to breed bees to be resistant, but it has to be productive, too," she said, suggesting that lower farm yields might be worth having to enable a stronger, but smaller, bee population.

Koehnen, like many beekeepers who raise bees primarily to be pollinators, said beekeepers are in a bind: They can't completely exterminate mites, because they risk killing off all their bees, so they must control for mites with chemicals that could also make their bees sick.

Koehnen came down from Glenn to meet the bee experts he said beekeepers now need to build strong relationships with.

"A lot of research needs to be done," he said.

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