

# Bay Area scientist with bees in his bonnet gives Gov. Newsom a buzz in his ear

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Among the presidents of nations, high-profile dignitaries, and leaders of household-name companies like Visa, ExxonMobil and Microsoft who descended on San Francisco last week to speak at Asia-Pacific

Economic Cooperation events was a Santa Cruz computer scientist who put a buzz in Gov. Gavin Newsom's ear.

BeeHero CEO Omer Davidi talked bees at the APEC CEO Summit, right after former U.S. Secretary of State Condoleezza Rice spoke about international relations, and before Gov. Gavin Newsom took the stage to discuss climate change and the California economy.

The world's population is growing, Davidi told host Helena Humphrey in a "fireside chat" at the Moscone Center. "We need to grow more food," said Davidi, in a gray suit and light-blue tie. "We need more pollinators, and bees are considered to be the most efficient ones." But the insects are in peril, with large numbers of bee colonies collapsing worldwide every year, Davidi told Humphrey, a BBC News presenter.

BeeHero, with its business offices in Palo Alto and headquarters near Fresno, aims to sustainably boost crop yields through artificial intelligence, in-hive bee monitoring and data analysis that maximizes pollination of food plants. The company has grown so quickly that it made the CNBC "Disruptors 50" list this year of innovative up-and-coming startups—a high-profile spotlight that helped put its CEO among such powerful company at APEC, Davidi believes.

The United Nations does not mince words when describing the risk posed by plummeting bee numbers, resulting from modern farming practices, pesticides, biodiversity loss and a warming climate: "The global decline in bee populations poses a serious threat to a wide variety of plants critical to human well-being and livelihoods," the UN's Food and Agriculture Organization said on World Bee Day in May 2019. Almost three-quarters of the crops that supply 90% of the planet's food depend on pollination by bees, the organization said.

The U.S. Department of Agriculture calls the health of honey bees and

the 4,000 wild bee species in the U.S. "of great importance to the well-being of U.S. agriculture, food security, and the nation's overall economy."

BeeHero, founded in Israel in 2017 by Davidi, second-generation beekeeper Itai Kanot, and systems engineer Yuval Regev, gives beekeepers sophisticated data-gathering sensors to create "smart" hives, and sells AI-powered consulting services to farmers employing the beekeepers, so they can plant, maintain and irrigate crops for maximal honey bee pollination.

BeeHero is now the largest "pollination provider" in the United States, Davidi said. The company in December announced 300% year-over-year revenue growth and \$64 million in total funding—including from food giant General Mills.

The three-day CEOs Summit ran through Thursday, and brought hundreds of powerful corporate leaders together for presentations and meetings with government officials from the 21 APEC nations.

As Davidi waited backstage at the Moscone Center, he chatted briefly with Newsom about BeeHero and the bee decline afflicting agriculture, he said. "I invited him—and we'll have to see if it happens—to see our solution in action during the next almond-pollination season in February," Davidi said afterward.

Davidi told the APEC audience that on farms where BeeHero technology has been installed, mortality rates of bee colonies have dropped 27%. "We've seen increasing outputs in different crops," he said, "almonds, apples, cherries, canola berries, sunflowers."

At the root of BeeHero's mission is a biological truth: For many fruits, vegetables, nuts and seeds, every flower that goes unpollinated means a

bit of food—like an apple or an almond—cannot be produced. A single strong bee hive, Davidi said, can pollinate tens of millions of flowers a day.

BeeHero has given 300,000 of its sensors to beekeepers, mostly in the United States but also on three other continents, and the keepers supply the hives and their services to the farms that are BeeHero's customers for pollination consulting. The beekeepers receive from BeeHero all the data from each of their hives. "Because we help them to improve the efficiency of their hives, we help them to make more money," Davidi said in an interview before the APEC summit.

The startup's sensors gather inside-the-hive data on temperature and humidity—key indicators of bee health, and, in the case of temperature, a way to determine when the queen starts laying eggs. The sensors also measure the noises bees make with their wings and bodies, with the sounds "translated" for purposes including identifying when a colony is weak or stressed.

BeeHero has not only pioneered using sensor technology for agriculture, it has succeeded in drawing significant investor interest, said Noah Wilson-Rich, CEO of The Best Bees company, a multistate beekeeping and bee-tech firm headquartered in Boston, with many hives in home gardens, on business rooftops and at research sites in the Bay Area. That fundraising success is drawing attention to the technology's promise, Wilson-Rich said.

For farmers, said bee researcher Alison McAfee at North Carolina State University, having BeeHero sensors in every hive could prove useful in large operations, so if a colony "crashes" during pollination from loss of its queen, a mite infestation or disease, the colony could be replaced during the pollinating period.

But with [varroa mites](#) the biggest killer of honey bee colonies, McAfee would like to see a monitoring device that could count mites and relay the data in real-time. "That would be a huge asset for effective varroa control," McAfee said.

Davidi said his sensors can identify major mite infestations through changes in the sound of bees' "grooming dances," and eventually a real-time mite count may be possible. At APEC, he was grateful to bring news of [bees](#), and of his company's solution, to a global audience. "The dependency of food production on those tiny little insects," he said, "is coming to mind for many people."

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