

per year for the organization's food pantries and provide additional volunteer opportunities for residents.

Ms. Deming said the Endowments has always been a generous supporter of the PFPC, awarding it with \$190,000 in 2016 in support of its sustainable food systems work. Between 2018 and 2020, PFPC received annual awards of \$190,000 from the foundation in support of the Greater Pittsburgh Food Action Plan project as well as of healthy food access and urban agriculture initiatives.

The Endowments has also given the Wilkinsburg Community Ministry \$50,000 annually for two years and emergency support during the pandemic, Ms. Kittner said. These grants have helped the organization retain employees and hire new workers to manage the pantry and food delivery services.

Further, funding from the Endowments has helped the Gardens of Millvale expand and sustain its infrastructure, Ms. Guerin said. Ms. Raqueeb Bey, the executive director of BUGs, said support from the foundation has helped the organization sustain operations since 2016, a year after BUGs was founded.

"We are grateful for Heinz and what they have done, for not just us but our community in general," Ms. Bey said.

MORE THAN JUST FOOD

In addition to fresh produce, urban farms provide their communities with a variety of resources and services that include K-12 education programs, food pantries and transportation services.

At North Hills Community Outreach, Mr. Baker said he hopes the food is just the start of an ongoing conversation that connects with the organization's 20 other services, which are designed to help meet the basic needs of people who contact them and include financial, utility, rental, transportation, tax and grant-writing assistance programs.

Urban farms can enrich the communities they serve in a variety of ways, Ms. Bey said. With its 31,000-square-foot property, BUGs offers farmers markets and classes to help educate Homewood residents about how to grow food. These services are essential for the neighborhood since it struggles from "food apartheid," and it hasn't had a grocery store since 1994, she added. This summer, the organization hopes to establish a co-op grocery store operation in the neighborhood.

"No one should have to travel outside of their neighborhood to go grocery shopping," Ms. Bey added. "In BUGs, we grow food, minds and leaders because we're farmers. But it's more than just growing food. It's growing communities. It's teaching people how to grow." **h**

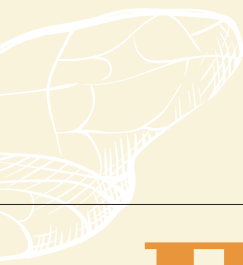
BEE SMART

**NEW VACCINE PROTECTS
HONEYBEES FROM DEADLY DISEASE.
BY DONOVAN HARRELL**

Donovan Harrell is a Pittsburgh-based freelance writer.



A beekeeper removes a tray from a hive to harvest honey.



Even on the days he's not beekeeping at the apiary on the farm operated by the Black Urban Gardeners and Farmers of Pittsburgh Co-op, or BUGs, Maurice Wofford loves to observe the honeybees' behavior. He's fascinated by them and their hives, which can have as many as 60,000 honeybees.

"Each one of them has an individual job to do for the greater good," said Mr. Wofford, the lead beekeeper for the farm in Pittsburgh's Homewood neighborhood. "Each individual bee, at any given moment's notice, is willing to sacrifice their own lives for the greater good of the hive."

In January, the first vaccine for honeybees was approved by the U.S. Department of Agriculture.

The vaccine, developed by Dalan Animal Health, which is based in Athens, Georgia, has given hope to farmers and beekeepers who think it can help weaken the impact of one of the serious threats to the nation's steadily declining bee populations.

Bees are part of a group of animals called "pollinators," which spread pollen from plant to plant, helping them reproduce. Pollinators include honeybees, butterflies, birds and bats, according to the USDA. They play a crucial role in the production of the world's agriculture system, pollinating nearly 75 percent of the world's crops that produce fruit and seeds for human consumption, according to the Food and Agriculture Organization of the United Nations.

But for years bees have been dying at alarming rates, faced with multiple threats that include pesticides, climate change and pollution. The implications of a society without bees are bleak, particularly concerning the impact on the global food supply chain.

"If we didn't have bees, we'd die," Mr. Wofford said.

In Pennsylvania alone, nearly 75 percent of fruits, vegetables, nuts and other major food crops depend on pollinators like honeybees, contributing more than \$260 million to the state economy, according to Pennsylvania State University analyses.

The bee vaccine aims to alleviate the effects of American foulbrood (AFB), a bacterial disease that can kill a honeybee hive in three weeks, according to Pennsylvania State University reports.

AFB is spread to bee larvae through food contaminated with the bacteria called *Paenibacillus larvae* and its spores. This kills larvae, liquifying them into a brown, foul-smelling mass. The disease not only attacks larvae but also kills a hive's ability to reproduce and spreads when more spores are produced after the bacteria kills the larvae.

The vaccine, according to Dalan Animal Health reports, contains a dead whole cell of the *Paenibacillus larvae* bacteria. It's mixed into queen feed, which worker bees consume and repurpose into royal jelly. The royal jelly is then fed to the queen bee who spreads fragments of the vaccine to her offspring. The larvae will then develop an immunity to the bacteria as they hatch.

Roughly 4,000 species of bees exist in North America, and 300 of those species exist in Pennsylvania, according to researchers at Penn State. These include bumblebees, sweat bees and *Osmia* bees. The European honeybee is not native to the region and is unique from a majority of bee species in multiple ways, according to Carolyn Mahan, a professor of biology and environmental studies at Penn State's Center for Pollinator Research.

Most bees, she explained, like native Pennsylvania bees, don't live in massive hives or produce honey. Instead, they live solitarily. "In fact, honeybees are the exception to the rule about how most bees live," Dr. Mahan said.

Honeybees are necessary for specific places, like urban farms, since native bees have smaller populations, and urban farms are not able to create enough natural habitat to support native bees, Dr. Mahan said.

This is the case for urban farms in Allegheny County, which depend on honeybees and other pollinators to help grow their crops, according to Dr. Mahan.

These farms, like BUGs, provide alternative sources of fresh produce for "food insecure" neighborhoods.

BUGs Executive Director Raqueeb Bey said the farm has 12 beehives, each producing honey, and the bees are essential for the farm and the neighborhood.

"Bees are important, not just for our farm, for everyone," Ms. Bey said. "Without bees, we can't grow anything. So even though we have beehives, we make sure we plant... flowers and plant herbs that the bees love."

John Bixler, executive director of Hilltop Urban Farm in Pittsburgh's St. Clair community, said bees are crucial to the farm's entire

operation, which has 23 acres of its 107 total land acres dedicated specifically to farming. In 2019, the farm started the Farmer Incubation Program, a professional development and entrepreneurship initiative through which people interested in farming are given a quarter-acre plot of land to build their own farm businesses. Randall Hall, one of seven people in the program, runs his beekeeping business, Beeboy Honey, on the farm.

Mr. Hall has 10 honey-producing beehives on the farm. He said there aren't enough wild, feral bees to help pollinate the crops on the farm, so the honeybees he works with fill in, allowing farmers to grow cucumbers and peppers.

"Farmers need bees," Mr. Hall said. "So, if I wasn't there, someone would have to be doing it. ... Whatever the farmers are planting provides a lot of food for the bees, too, and so it is a really cool relationship."

Because of this importance of bees to farming and the food supply, the bee vaccine has been viewed as a hopeful sign in helping to ensure their survival.

Mr. Hall experienced AFB effects firsthand in 2019 when he noticed something strange about his hives. He shared photos with other local beekeepers, who encouraged him to contact Pennsylvania's Apiary Inspection Program. By that summer, an outbreak occurred in the region, forcing beekeepers to burn their hives and destroy or sanitize their equipment to prevent the spread.

Mr. Hall, who assisted the inspectors, said he and other beekeepers aren't sure how AFB was introduced into the city.

"But this was such a rare thing that my mentors had never experienced it themselves," he said. "They'd seen it in labs, but none of us had seen this before. That was tough to go through, but it was good in the sense that it raised the issue."

Mr. Hall hasn't been able to use the vaccine yet, because, in part, of how rare the disease is. He also would like more information about how it affects bees' genetics in the long term.

But he said he finds the idea of a vaccine "interesting" and is cautiously optimistic about its future. **h**

