Robot Pollinator Eliminates Need For Bees

Commercial tomato growers worldwide have the opportunity to use artificial intelligence to eliminate the problems of working with bees.

"The way pollination is done around most of the world is by using industrially-grown bumblebees," says Eytan Heller, co-founder and Vice President of Business Development for Israeli-based Arugga AI Farming. "They're grown in laboratories, packed in carton hives, and then shipped to growers around the world."

While tomato plants self-pollinate, bumblebees give them some help in knocking the pollen loose and onto the plant's female organ.

However, there are some disadvantages to using bees. They don't do well above 86 degrees, which can be a big challenge for growers.

"Other issues include bees transmitting viruses between plants inside a greenhouse," says Heller "They're also sensitive to pesticides and can't be around when you spray plants, so there are some big drawbacks."

Countries like Australia don't allow growers to import bees due to biosecurity concerns. That means growers often have to manually pollinate their plants, which is a time-consuming and expensive process.

Arugga AI Farming launched in 2017. In one year, they demonstrated proof of concept, and two years later were operating their first AI robot in a commercial greenhouse.

Arugga named their robot "Polly," and it's made out of easy-to-source materials they could get "off-the-shelf" from different companies.

"We added a mast on top of the robot that consists of four cameras on both sides of the mast," Heller says. "An air pressure system shakes each plant's pollen loose."

The robot recognizes when a plant is ready for pollination based on what the AI

Pollination robot has cameras to determine when to use air pressure to shake pollen loose.

programming sees through the cameras. Heller says they had to create an enormous databank of flowers ready for pollination from many different angles.

"What we've done with the programming is teach the computer to recognize a flower's readiness," Heller says. "It's working well as we have a successful readiness detection rate of 97 percent."

The robot moves through the greenhouse between the rows of plants via tracks. In addition to pollination, the company plans to add non-contact pruning as well as pest and disease protection.

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Original remote control car model used by Barnett to pitch his idea to McDonald's.

Inventor Built The World's Most Famous Red Shoe

Jason Barnett has earned a living for more than 20 years by creating and building his wild ideas. Some of his creations are giant yard art from plane parts and furniture from old vehicles, but his real claim to fame is building the iconic Ronald McDonald Big Red Shoe Car.

That project began when a friend told him the company was looking for bids to produce and build a vehicle in the shape of Ronald's red clown shoe. Bidders were supposed to present ideas the next day in Houston, so Barnett says he quickly sketched his idea on a napkin. Then he spent the next 12 hrs. building a rough model on top of a PT Cruiser remote control car.

"I worked all night and finished at 5 am, then delivered it 4 hrs. later in Houston and handed it off to my friend Bill," Barnett says. "When the board meeting was assembled, Bill opened the door and drove the remote-controlled shoe prototype into the room. The rest is history. Within minutes, my phone was ringing, and the board wanted to meet me."

Barnett says he and the company worked two months on design details and about a year later he received a check to start the real work. Originally, he'd planned to mount the body on a 2003 Chevy pickup with a V-8 engine. He removed most of the truck's body, then formed the shoe shape out of large foam blocks to fit on the chassis. His mockup measured 8 ft. wide in the front, 4 ft. wide in the back, and was nearly 23 ft. long.

"It was a tough job to get everything carved out. After, I coated it with drywall mud to create a smooth surface. Then, I applied latex paint so the fiberglass could adhere."

During construction, he made design

Jason Barnett built the Ronald McDonald Shoe Car on a Chevy 1/2-ton pickup chassis.

improvements such as having the entire nose of the shoe open forward to access the engine. The driver and passenger seats are accessed through "suicide" doors that open from the front to the back.

Throughout construction, which took nearly two years, Barnett would drive the shoe vehicle around and test it for squeaks and rattles. "Kids would freak out whenever I drove by, so I knew the idea was going to be a success," Barnett says.

Initially, he'd planned on doing the whole project himself but soon realized that wasn't possible. Friends and family volunteered their help, spending many hours and long nights bringing the car to life. Barnett even had to take a part-time job because he'd drastically underbid the actual cost of producing it.

"I hadn't built something this large before and really underestimated the time, but the project was definitely worth the effort," he says. His famous Ronald McDonald's Big Red Shoe Car has been in the Macy's Thanksgiving Day parade.

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For the custom top, the family got a second casket lid, covered it with florist foam, and inserted wheat heads into it.

Custom Casket Honors Lifelong Wheat Farmer

When his father passed away, Robert Kitto wanted a unique way to commemorate his career. "My dad Ian was a wheat farmer all his life, just like his dad and several generations before them," says Kitto.

"Dad loved the farm and farming, and most of all, he loved harvesting. He lived to drive a combine. So, as a family, we decided to put a sticker wrap on Dad's casket showing a harvest scene." The photo they chose was a favorite of their father's that was taken during harvest several years prior. For the custom top, the family got a second casket lid, covered it with florist foam, and inserted wheat heads into it.

"We left two cutout sections, one for placement of his favorite model tractor and another for his work boots that he rarely took off," says Kitto. The final design offered homage to a lifelong career that defined the entire family. "I'm also a wheat farmer and feel very privileged to have worked side by side with my father for the last 40 years on the same farm."

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