

# Helping to Keep Michigan's Honeybee Population Healthy

**M**SU researcher Zachary Huang has developed a chemical-free method of controlling Varroa mite, a pest that is devastating the honeybee population in the United States. Varroa mites, the No. 1 pest of honeybees, have nearly wiped out all native bee colonies in the United States and continue to threaten the country's remaining 2.7 million commercial colonies.

The device developed by Huang, called the Spartan Mite Zapper, consists of wires implanted into the isolated drone comb and uses electricity to kill the mites. Two electrical terminals located outside the hive are hooked up to a 12-volt battery for

10 to 15 seconds. Enough heat is generated to kill both the mites and drone pupae, but not the worker bees. The device can last for up to 10 years and costs one-eighth the cost for chemicals.



Many fruits and vegetables depend on honeybees for pollination, and inadequate pollination results in less valuable produce, such as lopsided apples or curled cucumbers. Bees pollinate home gardens and wild fruit, nuts and seeds needed by

wildlife to survive and a number of native crops important for erosion control. The value of this spillover pollination is immeasurable but substantial. The role of the honeybee also extends into the health food and alternative medicine markets.

Michigan produces about 7.6 million pounds of honey annually at a market value of \$5.7 million, ranking it among the top 10 states for honey production. Michigan's top 10 ranking in many fruit and vegetable crops, valued at more than \$231 million, also depends on pollination from a healthy honeybee population. When values from other crops that depend on pollination are included, the state's revenue from honeybees tops \$300 million.

U.S. beekeepers traditionally used chemicals to control Varroa mite populations, but this method is very expensive and shrinks the already small profit margin for beekeepers, Huang says.

## IMPACT

*An application has been filed to patent the Spartan Mite Zapper. This device could save beekeepers millions of dollars each year in Varroa mite control without using chemicals.*