

# Project shows NOW prefers pistachios

PREVIOUS science says the navel orangeworm prefers almonds over other nuts, but Gabriel Leal has discovered otherwise. Through his sixth-grade science project for Leslie Whiteford's class at Willet Elementary School, Davis, Gabriel has found the NOW actually favors pistachios.

He did his research in his father's lab at University of California Davis under the volunteer supervision and mentoring of chemical ecologist Zain Syed.

"It was a 'choice' experiment where Gabriel placed mated egg-filled females in a cage," Syed explains. "He used four commercially available ovitraps for NOWs. One trap was filled with 50 grams of shelled pistachios, another with 50 grams of almonds and the third with 50 grams of walnuts. The empty trap served as the control to check if the trap itself had any effects on attracting egg-laying moths. The eggs laid in the ovitraps were counted for two consecutive nights."

Says his father, professor Walter Leal: "Gabriel got enough NOW replicates to demonstrate that female navel orangeworms do prefer pistachios over walnuts and almonds. We are very excited with our little scientist's discovery. And these findings changed our research direction because we are now interested in determining what chemistry in pistachios attracts female navel orangeworms.

"Egg-laying attractants derived from

almond oil are used to monitor female populations in the field," Leal explains, "but during hull split, the chemical from the crop competes with the synthetic material in traps. If we use pistachio-derived attractants in the almond field, there will be no competition throughout the flight season."

Gabriel initiated the project in September after text-messaging the idea to his father, who was 7,000 miles away

delivering a keynote address at an entomology conference in Brazil.

"When I received the text message, I thought 'No way,'" Leal says. Syed also thought, "No way."

"Gabriel was really excited about the project, especially when he was counting the number of eggs laid in the pistachios," says Syed.

"The results," he adds, "shocked us."

— Kathy Keatley Garvey



PHOTOS BY KATHY KEATLEY GARVEY

GABRIEL LEAL



**SMALL BUT DESTRUCTIVE:** A navel orangeworm is shown on a pistachio. Adult moths, about an inch long, are gray with black markings and have a snoutlike projection on the head. At two days old, the adult females begin laying eggs.

## A major pest to tree crops

THE navel orangeworm is a major agricultural pest in California, says professor Frank Zalom, University of California Davis Integrated Pest Management specialist. Zalom has studied the insect for more than 30 years.

"Navel orangeworm is considered the key state insect pest of almonds and pistachios because the larvae feed directly on the nut meats, making them unsuitable for the marketplace," Zalom says. "Damage in excess of 2% of nuts is considered unacceptable. Navel orangeworm larvae also feed on walnuts, pomegranates and other crops."

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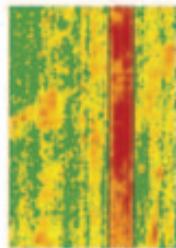


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