

enterprise



Sports UC Davis men lose Big West basketball opener

"In science we should never underestimate anyone's idea."

Walter Leal
UCD entomology professor

Weird science

UCD entomologists are intrigued by sixth-grader's research

By Kathy Keatley Garvey
SPECIAL TO THE ENTERPRISE

Sometimes surprises come in small packages — with startling results.

For his elementary school science project, an 11-year-old Davis boy who prefers pistachios over all other nuts figured that the navel orangeworm, a major agricultural pest, would too.

"Pistachios taste better," reasoned Gabriel Leal, whose family says he can eat an entire bag of pistachios at one sitting. Pistachios have long been his favorite nut, so why wouldn't the navel orangeworm prefer pistachios over almonds and walnuts, too?

The sixth-grader hypothesized that the insect would lay more eggs in pistachios than in almonds and walnuts, contrary to widely published research that indicates an almond preference.

"Everybody knows that navel orangeworms prefer almonds," said his father, Walter Leal, a chemical ecologist and professor of entomology at UC Davis. Research published recently in the California Agriculture journal also indicates the preference.

"But in science," Leal said, "we should believe what we see, not what others tell us. I know that Gabriel prefers pistachios, but I assumed the navel orangeworm's taste receptors were different."

Wrong. Gabriel's research showed that the insects preferred pistachios, just like he does.

The findings led to a report at the Almond Board of California's 32nd Almond Industry Conference, held Dec. 1-2 in Modesto, and launched a new direction of chemical ecology research at UC Davis.

Gabriel, a student in Leslie Whiteford's class at Willett Elementary School, performed his

research in his father's UC Davis lab, under the volunteer supervision and mentoring of chemical ecologist Zain Syed.

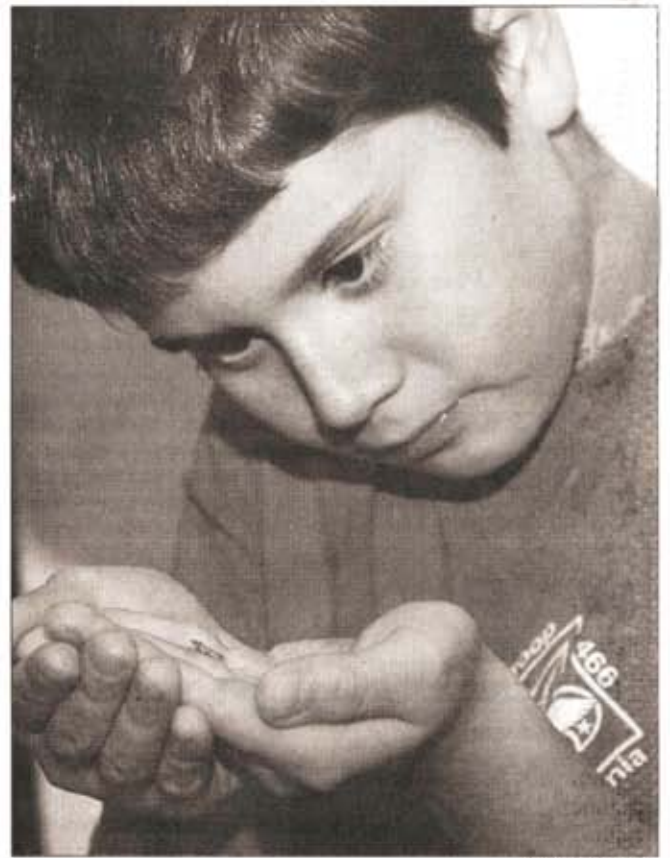
"Gabriel got enough replicates to demonstrate that female orange navelworms do prefer pistachios over walnuts and almonds," Leal said. "We are very excited with our little scientist's discovery. I reported 'our' findings at the state almond industry conference in Modesto. And these findings changed our research direction, because we are now interested in determining what chemistry in pistachios attracts female navel orangeworms."

Research entomologist Brad Higbee of Paramount Farming Company in Bakersfield called the boy's research "interesting, provocative and intriguing."

"It's provocative in the sense that we know little about the natural preference of the navel orangeworm," Higbee said.

He added that it is a pest that attacks tree crops planted on more than one million acres in California, and it is the primary and most destructive pest on almonds and pistachios. The economic impact of the worm's damage varies from year to year, but it can easily reach \$10-15 million for Higbee's company — and much higher statewide.

Researchers and growers often use egg traps baited with a mixture of almond meal and almond oil to attract the pests.



COURTESY PHOTOS

Gabriel Leal holds a navel orangeworm, the subject of his research that has garnered attention from almond growers throughout the state. Gabriel has proven that the navel orangeworm, below, prefers pistachios to almonds.

Higbee said that developmental studies conducted in the Paramount laboratory and in the Joel Siegel lab, USDA-Agricultural Research Service, Parlier, confirm that the worm develops much faster when fed pistachios relative to almonds.

Gabriel initiated the pistachio project in September after text-messaging the idea to his father.

"When I received the text message, I thought 'No way,'"

Leal said. "No way would the navel orangeworm prefer pistachios over almonds."

Syed agreed with Gabriel's father.

But they figured that Gabriel, despite a wrong hypothesis, could learn more about the scientific method and about an agricultural pest that wreaks havoc on

California nut orchards.

"Gabriel was really excited about the project, especially when he was counting the number of eggs laid in the pistachios," said Syed. "The results shocked us."

The take-home message?

"In science we should never underestimate anyone's idea," Leal said. "That's why the academic environment is so enriching. Students come with new ideas, but I never imagined we would benefit so much from a science project for elementary school."

