

# See no weevil: Researcher tracks rice bugs to help farmers, consumers (w/ Podcast)

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Dr. Michael "Mo" Way, Texas AgriLife Research entomologist at Beaumont, examines a rice plant in his lab. He's making gains on the water weevil which takes huge bites out of the rice crop globally every year. Credit: (Texas AgriLife Research photo)

When there's something bugging rice farmers, a large segment of the world's population is likely to find out.

Americans eat about 20.5 pounds of rice a year, while globally people annually eat about 126 pounds each, according to the United Nations Food and Agriculture Organization. Yet a big bite is also taken by insects in the field every year.

One of the worst, the rice water weevil, is a Southeast Texas native measuring in at less than one-fourth inch long. But its gray snout has chomped through much of the world making a sizable dent in the size and quality of global rice supplies.

A Texas researcher is making great strides - many of them splashing through rice paddies to scour grassy pinnacles and seed heads with his net - in controlling the rice-craving insect.

"I'm looking for ways to integrate a variety of treatments to manage pests efficiently and economically," said Dr. Michael "Mo" Way, Texas AgriLife Research entomologist at Beaumont, who has been working with rice and soybeans there since 1982.

Rice water weevils are among the most serious pests in terms of causing lower yields and grain quality, Way said. And they don't just stop in Texas. Rice water weevils have become a global pest -- making it to California by the 1950s, to Japan in the 1970s, then China, Taiwan and more recently, Italy. In Texas, farmers can lose from 500-1,000 pounds per acre as this weevil swims, crawls and flies through the field, laying eggs underwater so the larvae can grow by gnawing on rice plant roots, the researcher explained.

Way was patient in his quest to see no weevil. He spent six years sweeping through fields, looking for water weevil damage to determine at what level it would make sense for a farmer to spend money controlling the pest.

Farmers had been referring to old data, he said, though many new rice varieties are being grown and with newer cultural methods, and it was not known whether these changes had made a difference on rice weevil control.

Armed with many seasons of field data from test areas grown as much like true farm situations as possible, Way and then-graduate student Luis Espino compared protected versus unprotected plots with those planted on a variety of dates. The protected plots were treated with various insecticides.

"What we found is that if farmers plant during the optimum planting window, then they can expect the greatest yield losses due to water weevil," he said. "And since we don't recommend planting outside that optimum time, it behooves them to control for the weevil."

"Usually, our highest management level farmers plant during that optimum time, from end of March to mid-April, and that enables them to produce a ratoon, or second crop as well," he added. "So, it makes good economic sense to control for the weevil."

To sample for water weevil in a field, Way and his team take a 4-inch by 4-inch plug that contains about three plants and the soil around the roots.

"For every one larvae per core, yield is reduced about 1 percent," he said. "So the economic injury levels (number of insects it takes to cause significant loss) are very low -- much lower than we thought."

Control usually means an insecticide, he noted, but researchers have also made strides in this area as well to develop products that are not as toxic to the environment as in the past.

"One of these is a seed treatment with rynaxypyr, a chemical that is far less toxic to mammals and wildlife than previous compounds," Way said. "Reports from the field this year where this product was used are very, very encouraging."

Way said because seed treatment is a preventive measure -- it has to be

applied to the seed before planting and well beyond the time when larvae are found in the cores -- the researcher recommends that farmers go on their field history with weevils.

"Certain areas are more prone to water weevil damage," he said. Farmers should also make the decision to use seed treatment based on planting date, variety, seeding rate, typical plant stand and time of flood. "Based on these parameters, they can decide for themselves whether they will need the seed treatment," he added.

The study also noted a couple of secondary benefits from the seed treatment -- all of the chemical stays with the seed rather than drifts in the air, and it has shown ability to control other rice pests such as stalk borers, fall armyworm and South American rice miner.

"So this reduces the pesticide load in the environment," he said. "And farmers have another tool in their toolbox."

And people have more rice on their plates.

Source: Texas A&M AgriLife Communications

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