

Entomologist Studies Potential Threat To Arkansas Rice

FAYETTEVILLE, ARK.

A researcher at the University of Arkansas' statewide Division of Agriculture is investigating an imported pest less than one-one hundredth of an inch in length that may pose a new threat to Arkansas rice crops.

The panicle mite has been found in farm fields in Texas and Louisiana, but not in Arkansas, said entomologist Ashley Dowling.

Dowling said the panicle mite is present throughout rice-growing areas of the Caribbean and Central America, including Mexico, less than 10 years after its accidental introduction. It may have entered the U.S. in rice seedlings shipped from winter nurseries in these countries.

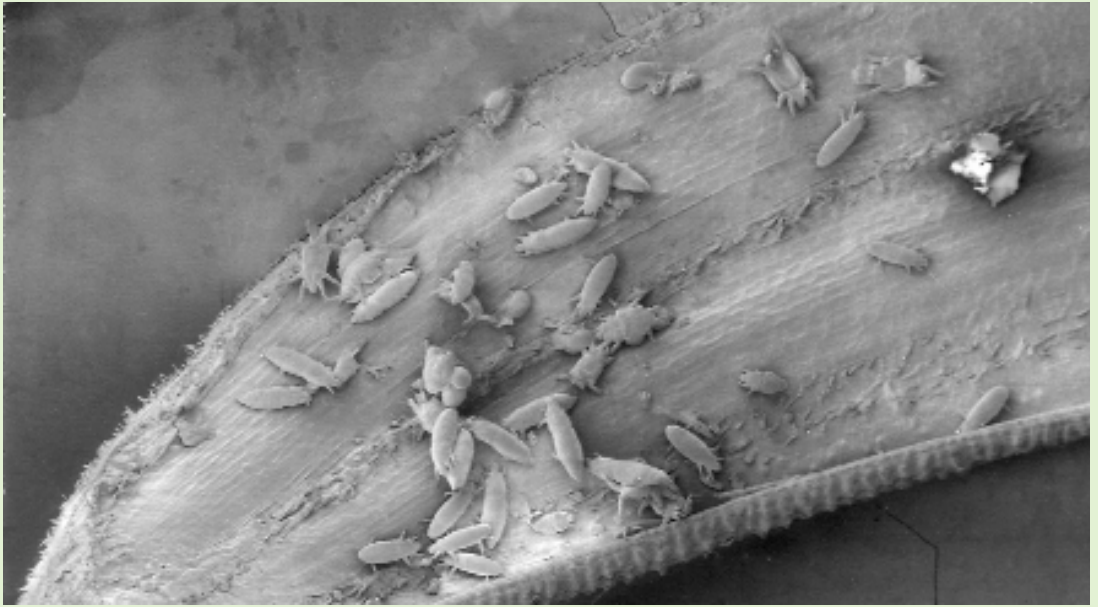
The mite's origins are not known for certain, Dowling said, but it is an important pest throughout tropical regions of Asia, specifically

completely hollow out the rice hull," Dowling said. In some cases, after milling, as much as 20 percent of a crop has simply disappeared, he said, because the mites left nothing but the hulls.

Feeding inside the seed also raises the danger of spreading the mite by transporting the grain, Dowling said.

How the mite moves from field to field is virtually unknown and is another area of the pest's biology that requires further study, Dowling said.

"There are also several diseases associated with the panicle mite," Dowling said. "Fungal sheath rot and bacterial panicle blight have been found associated with mite feeding." He said it's the combination of the mite and the diseases that lead to crop losses of 80 percent or more.



A USDA image shows panicle mites infesting a rice seed.

China and Taiwan where it has been destructive. The mite's role in temperate regions of these countries has not been well studied, but reports do not indicate severe losses like those in tropical regions.

Dowling said it's not known why the panicle mite has less impact in temperate Asia, but scientists suspect either that the mite cannot survive winters in four-season climates or that it has natural enemies that keep its population in check in those areas.

Whether the panicle mite will be a problem in Arkansas is not known, Dowling said. It may not be able to survive the state's winters, or it may be able to overwinter in host plants other than rice. Louisiana researchers are finding the mites on many plants that commonly grow near rice fields, but it is not known whether the mites can use them as host plants between planting cycles, he said.

"In the meantime, it's best to be aware of the potential threat now, before it becomes a problem," Dowling said.

The panicle mite feeds on the rice plant as well as inside the endosperm of the seed. "It will

Dowling said pesticides don't seem to control the panicle mite very effectively. John Bernhardt, entomologist at the division's Rice Research and Extension Center near Stuttgart said the mite attacks the rice plants behind the leaf sheath, where pesticides don't reach very effectively. Because of this, cultural practices and natural enemies have the best potential for controlling the pest.

Dowling is beginning a population genetics study of the panicle mite to backtrack to its place of origin. "If we know where it comes from, we'll know where to look for natural enemies that we may be able to use for biological control," he said.

The genetic data will also be used to develop molecular tools for identification and detection of the panicle mite, Dowling said.

Bernhardt said the USDA's Animal and Plant Health Inspection Service (APHIS) has been working closely with the State Plant Board and monitoring Arkansas rice for the panicle mite.

"APHIS has been involved because the panicle mite is a pest that's new here and that we don't want around here," Bernhardt said. Δ