

**Delimiting Survey for
Panicle Rice Mite in Arkansas**

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ABSTRACT

The panicle rice mite, *Steneotarsonemus spinki* Smiley, is a major pest of rice worldwide. The mite has been detected in Kenya, China, Taiwan, India, Japan, Korea, Thailand, Sri Lanka, Philippines, Cuba, Dominican Republic, Haiti, Colombia, Costa Rica, Panama, Nicaragua, Honduras, Guatemala, and Venezuela (Hummel et al., 2007). Recent field introductions into Puerto Rico, Texas, Louisiana, and Arkansas have created the need to conduct a delimiting survey for the panicle rice mite. The 2008 survey indicated no panicle rice mite movement from the initial infestation area in Arkansas.

INTRODUCTION

Steneotarsonemus spinki Smiley, panicle rice mite (PRM), are small mites (200 to 300 μm) which are translucent to pale white in color, and are pests of rice. Males tend to be smaller than females and have highly modified hind legs that are carried above the body. Females are parthenogenic, meaning that their unfertilized eggs will hatch as males when there are no males available for reproduction (Xu et al., 2001). The PRM can be found in the inner part of the rice sheath and, as the rice grain develops, in the panicles. It is thought that PRM feeding and reproductive activities reach their peak during the milky stage of grain development. Symptoms of PRM infestation include parrot beaking, blanking, grain discoloration, and possibly the presence of bacterial panicle blight or sheath blight pathogens. PRM has been a serious pest of rice crops in China, the Philippines and Taiwan since the 1970's where it has caused average yield losses of 5 to 20%, and in some areas losses of 70 to 90%. Since 1997, the PRM has caused 30 to 90% loss of yield in Cuba, 30% yield loss in the Dominican Republic and

Haiti, as well as 40 to 60% yield loss in Costa Rica, Panama, and Nicaragua (Castro et al., 2006). In 2007, PRM was found in breeding facility greenhouses in Texas, Arkansas, Louisiana, and New York, as well as a limited number of fields in Arkansas.

PROCEDURES

A survey of 60 fields from 15 counties, with a minimum of two fields selected per county, was conducted in Arkansas during the 2008 rice season. Fields were selected primarily by availability with first priority given to fields of ‘Cheniere’ rice that had been purchased from Louisiana and Texas. Secondary consideration was given to accessibility. Suspect fields were sampled upon notification from county extension agents. Samples were taken when the majority of rice plants within the field were between the heading and milking stage, when mite populations are expected to be at their highest. Each field was sampled beginning at the water inlet, where a GPS coordinate was taken, at the four corners of the field, and at even intervals around the perimeter of the field when accessible. Samples were identified by county, field, and sample number, and consisted of three tillers per sample wrapped in a dry paper towel and stored in a sealed plastic bag. Sixty samples were taken from each field and stored, on ice, in a cooler until being sent to the USDA, APHIS, PPQ, CPHST lab in Mission, Texas for processing. Before and after sampling each field, all equipment, boots, and hands were disinfected to prevent cross-contamination of any kind.

RESULTS AND DISCUSSION

Of the 60 fields sampled in Arkansas, there was no indication of panicle rice mite movement from the initial infestation area. Further sampling will be done to monitor this pest. It is not yet known if the PRM will have a serious impact on crop yields in Arkansas; however, yield losses in Central America and other countries around the world have ranged from 30 to 90%. Chemical control of the PRM has been difficult because of the mite’s location on the rice tiller, in the inner part of the rice sheath. There are currently no miticides labeled for field management of the PRM in the United States, although research is being conducted to develop chemical options for management of this pest.

SIGNIFICANCE OF FINDINGS

It appears that the rice panicle mite has not yet become established in Arkansas. However, due to the history of this pest and its ability to move from one place to another through the transport of seed, wind dispersal, greenhouse and field workers, agricultural machinery, plant to plant transmission, hitchhiking on insects and birds, and floating on debris on flooded fields (USDA APHIS, 2008), it is in the best interest of rice growers that we continue to monitor for the mite.

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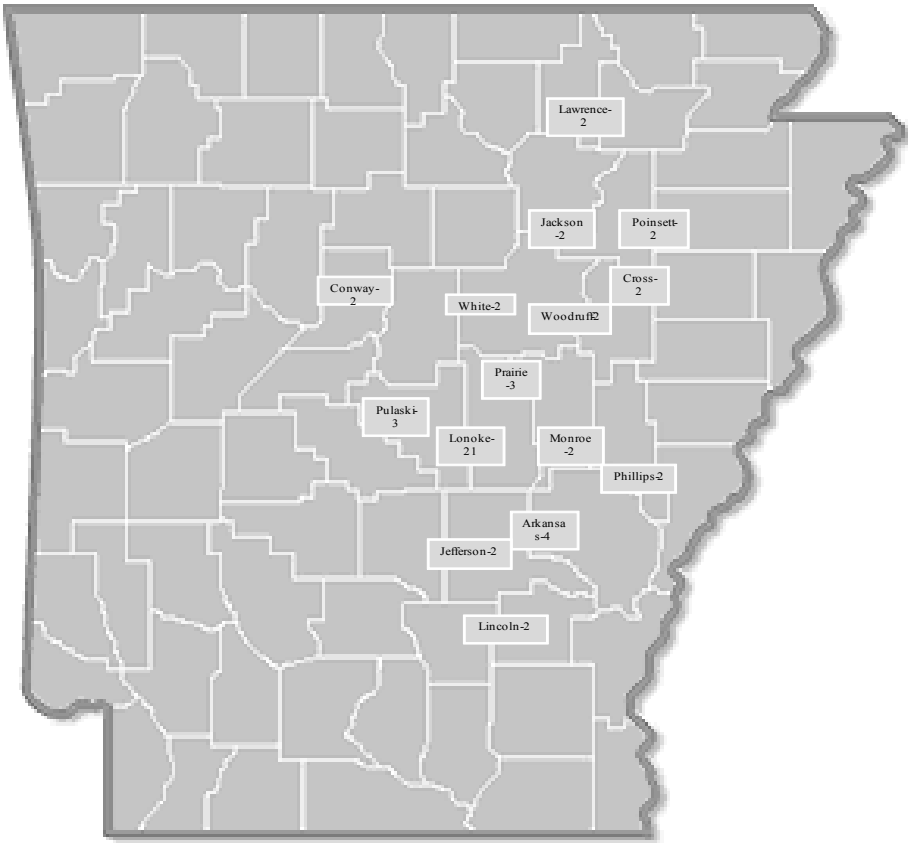


Fig. 1. Counties where samples were taken and the number of fields sampled in each.