Rice Blast On The Rise Again

LITTLE ROCK, ARK.

Rice blast is on the rise again across the Natural State, following last year's blight, which was the worst in two decades, said Rick Cartwright, professor-plant pathologist for the University of Arkansas Division of Agriculture.

As of June 15, rice blast was reported in 17 counties: Ashley, Desha, Lincoln, Jefferson, Arkansas, Monroe, Prairie, Lonoke, White, Woodruff, Cross, St. Francis, Lee, Poinsett, Jackson, Lawrence and Randolph.

Pyricularia oryzae, the fungus known as rice blast, survives year-to-year on infested seed and crop residue, said Cartwright.

"After the widespread damage in so many fields last year, and with our increasing tendency to plant rice after rice and use no-till systems, it's not surprising that we are having a lot of leaf blast already this year," he said.

Rice blast is a worldwide problem in rice and is dangerous because of its yield loss potential under favorable conditions. During last year's the rainy summer in Arkansas, some severely affected fields suffered up to 80 percent yield loss.

With blast comes more blast. It can be a vicious cycle.

Blast fungus spores land on rice leaves, where they germinate and grow, creating spots after several days. Spores are released from the spots by dew or rain, and carried in the air to other plants, where they produce more spores.

Moderate temperatures, frequent rainfall, long dew periods, frequent cloudy weather and "upland conditions" – in which rice grows with inconsistent or intermittent flooding - create favorable conditions for the fungus, said Cartwright.

Wet weather in particular encourages fungal growth, as spores need free water and a few hours to infect plant tissue, he said.

Arkansas had one of its wettest years on record in 2009, with much of the state receiving 125 percent to 175 percent of normal rainfall, according to the National Weather Service. More than a dozen areas reported over 80 inches of rainfall last year.

The first line of defense against blast is to plant resistant rice varieties in fields with a history of the disease, said Cartwright.

"In fields where blast has a strong history, resistance may make the difference between a decent crop and no crop," he said.

The highest yielding varieties are often the most susceptible to blast. The most frequently reported varieties with blast so far this year include CL 151, Francis, Jupiter and Wells, said Cartwright.

Hybrid rice varieties are an exception because they combine high yield with high disease resistance – the best of both worlds. However, their high seed cost prevents them from being universally adopted, he said.

"We often use highly resistant rice varieties and hybrids tend to be grown in situations that strongly favor blast," said Cartwright. "Unfortunately, the rice blast fungus can adapt to varieties with resistance, so planting resistant varieties in fields not suited to rice production or using irrigation systems designed for 'dryland' crops will eventually result in a race of the fungus that can infect resistant varieties and hybrids."

Flooding properly is a very important method of prevention.

Shallow floods, intermittent floods, furrow-irrigated and pivot-irrigated rice systems strongly favor blast development, he said. "Last year most of the damaged fields had water management problems in spite of excessive rainfall."

On farms where irrigation water is limited, rice acreage should be limited to what the system can handle, said Cartwright. If blast is already present, it can be minimized by establishing and maintaining a deep flood throughout the growing season.

"Research has shown that a deep, consistent flood can be worth a fungicide application on a susceptible variety," he said. "If you cannot maintain a deep flood on a field, then the field should be planted with a resistant variety."

Fungicides are the final blast management option.

Modern fungicides are more effective than older ones at preventing blast, said Cartwright. "Unfortunately, they are not curative, so they must be applied before infection occurs to be most effective."

Growers should report any instances of rice blast to their county extension agent, since division plant pathologists are trying to monitor changes in the fungus over time. Δ