

## **Agronomy Fact Sheet**

## Fact Sheet #10

# **Rice Blast in California**

## Introduction

Rice blast is the most destructive disease of rice worldwide. In California, blast was first found in the late 1990s, and since then it has become endemic in the northwestern part of the Sacramento Valley. However, in years with favorable weather conditions, the disease has been observed in all rice production areas of the state.

## **The Pathogen**

Blast is caused by the fungus *Magnaporthe oryzae*. The fungus can infect any part of the plant, except the roots. In California, noticeable infections usually occur after full tillering, causing leaf lesions. Lesions are diamond shaped and have a yellow halo around them (Fig. 1).



Figure 1. Diamond shaped blast lesion. Notice the yellow halo and gray sporulation in the center of lesion.

In severe cases, blast lesions coalesce and burn foliage to the water level (Fig. 2). This usually occurs in field headlands, where nitrogen application overlaps. Blast infections on leaf tissue are commonly referred to as "leaf blast". Blast infections can also occur later, during heading, with blast lesions developing in the node below the panicle, causing "neck blast", which can produce blanked panicles (Fig. 3).



Figure 2. Leaf blast in nitrogen overlap.

Blast spores can be moved by air currents. They need free moisture on the plant surface (leaf wetness) to germinate and penetrate the tissue. After infection, lesions develop in four to five days, and spores are formed on lesions two to three days later. These spores can then be moved by wind and cause new infections. As tissues mature, they become more resistant to blast infection. During the off-season, the fungus survives on infested rice residue and seeds on the soil.

Blast is favored by long periods of leaf wetness, high relative humidity (>90%), and warm temperatures (>68F). Leaf wetness that starts early in the evening or lasts into the late morning hours, coupled with warm temperatures, can lead to spore germination and infection.





*Figure 3. Neck blast. Notice lesion in the node below the panicle.* 

## Management

#### Seed

Blast spores can be found infecting rice seed. The sodium hypochlorite treatment used during the seed soak does not eliminate blast spores from the seed. Using certified seed reduces the risk of introducing inoculum to a field.

## Water Management

Infection from seed to seedling under flooded conditions is very unlikely. Draining early for stand establishment or herbicide application may allow seedling infection.

#### Fertility

Excess nitrogen increases the susceptibility of plants to the disease. Leaf blast is usually observed first in nitrogen overlap areas. Midseason nitrogen applications should only be made when the crop is nitrogen deficient.

#### Fungicides

Azoxystrobin and trifloxystrobin (the active ingredients in Quadris and Stratego, respectively) are registered for control of blast disease in California. In general, applications to control leaf blast are not recommended unless plant stand is severely affected. Presence of leaf blast should be an indication that a treatment for neck blast will be needed. To protect the panicles from neck blast, applications should be made at the early heading stage (20-50% heading). If economics allow for two applications, target the boot split and 50% heading stages.

## For more on this topic:

- ✓ Integrated Pest Management for Rice, Third Edition. UC Agriculture and Natural Resources.
- ✓ UC IPM for Rice: ipm.ucanr.edu
- ✓ Agronomy Research and Information Center-Rice: rice.ucanr.edu
- ✓ Greer, C. A. and R. K. Webster. 2001. Occurrence, distribution, epidemiology, cultivar reaction, and management of rice blast disease in California. Plant Disease 85: 1096-1102.
- ✓ Compendium of Rice Diseases, Second Edition. APS Press.

#### Agronomy Research and Information Center

http://agric.ucdavis.edu/



University of California Cooperative Extension

Author(s): Luis Espino 2020