

Rice Blast Disease Management



- Prepared by Don Groth, Professor, LSU AgCenter Rice Research Station, Crowley, LA and Clayton Hollier, Professor, LSU AgCenter, Department of Plant Pathology and Crop Physiology, Baton Rouge LA.

Rice Blast Causal organism

- Perfect stage: *Magnaporthe grisea*
- Imperfect stage(anamorph): *Pyricularia oryzae*



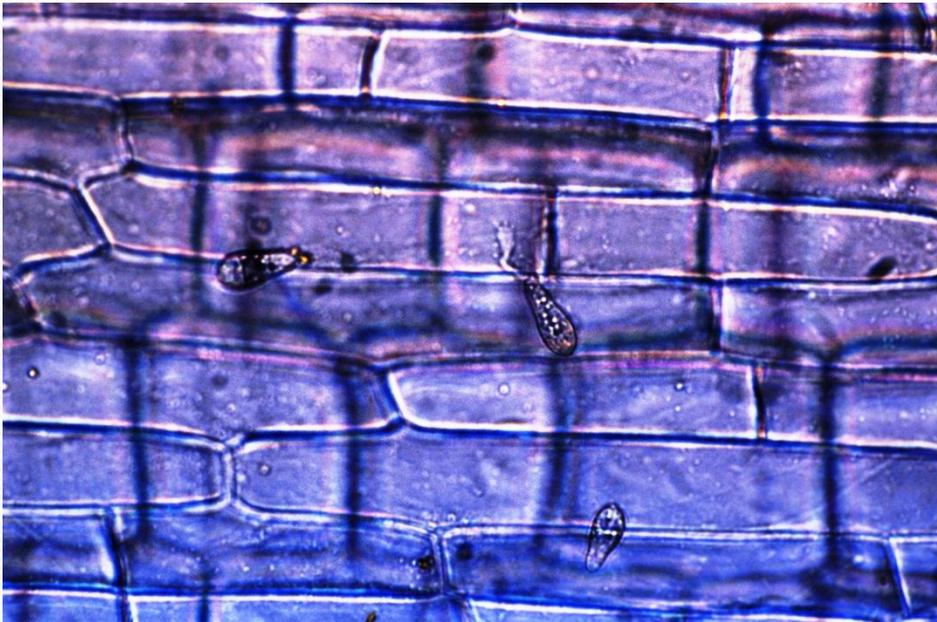
P. oryzae can infect rice from the seedling stage to harvest maturity, however in the United States the disease usually develops during tillering (leaf blast) and at heading (panicle blast)



The pathogen overwinters as spores in infected plant debris. The fungus produces new spores in the spring that reinfects rice. Spores are carried by wind and splashing rain. Movement can be over long distances.



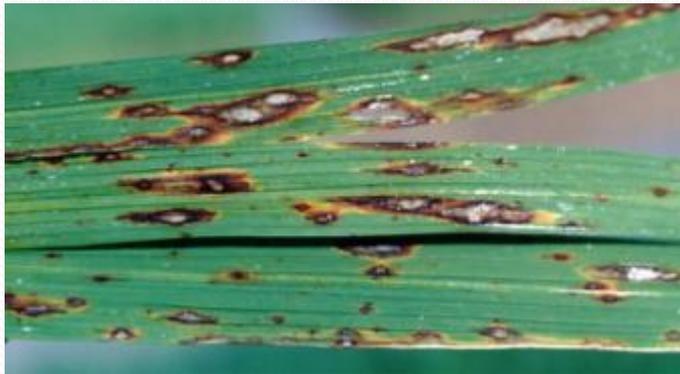
The fungus infects the plant by the spore germinating and forming an aspersorium (a thick fungal cell) on the plant surface and then exerting a hostoria (feeding structure) into the plant cells. A minimum of 8 hrs moisture is needed for infection to occur.



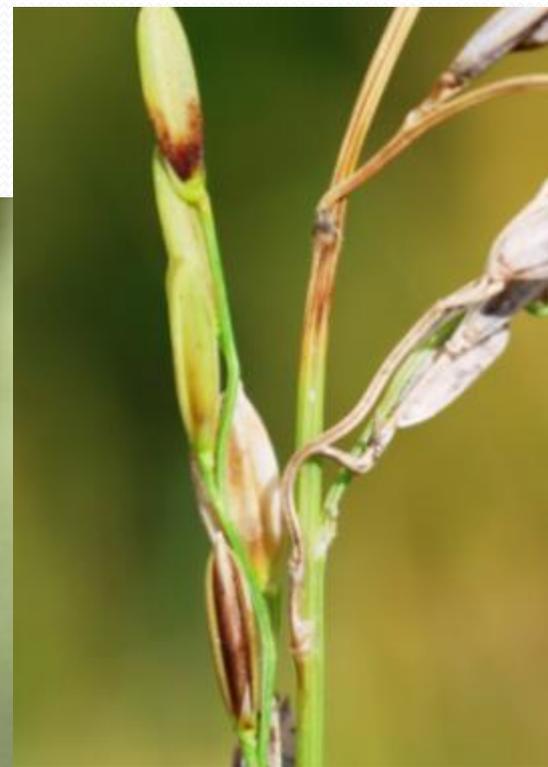
Most plant parts are susceptible to infection except the roots.



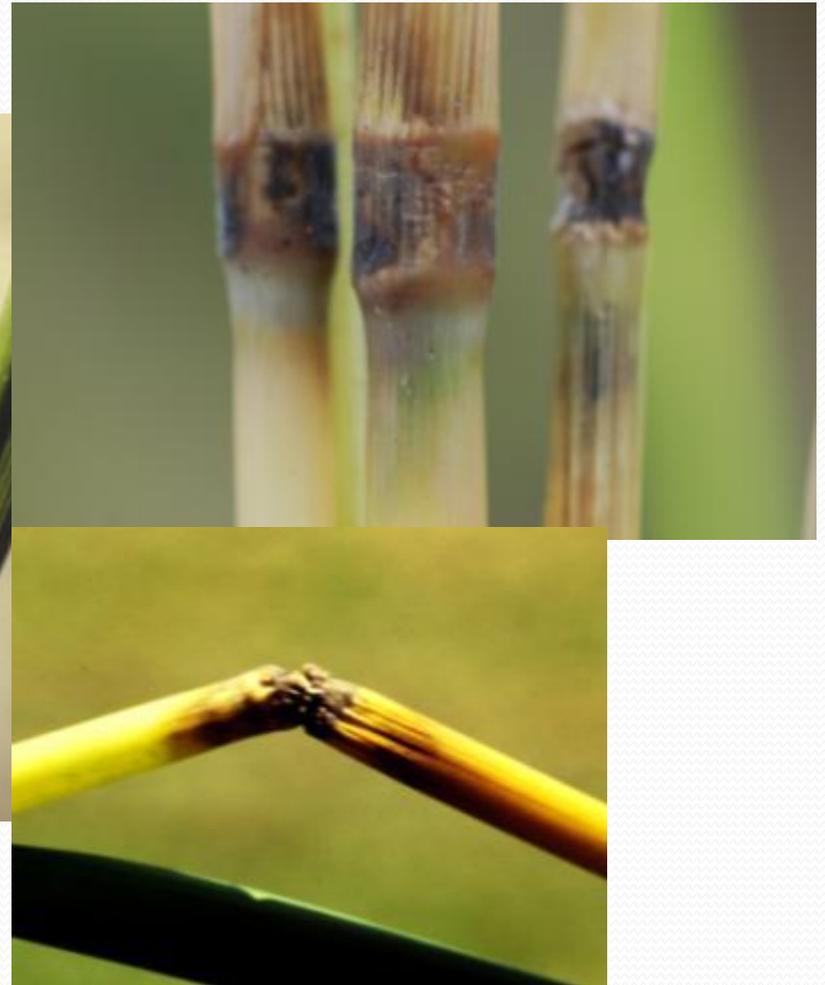
The initial infections occurs on leaves usually around tillering and appear as diamond, football, or spindle shape lesion with pointed ends. Lesions start as small water soaked areas on young leaves and enlarge into diamond shape with a blue gray cast which are the fungal spores. Lesions often dry out and turn tan with a brown border. Lesion shape and size can vary.



Head infections usually develop at the joint just below the head (neck blast) or on individual panicle joints (panicle blast). The head can break off at neck lesion and cause what is called rotten neck blast.



After stem elongation nodes can be infected causing node blast. Symptoms usually appear as white heads and unexplained lodging.



The fungus produces many spores, on stalk like structures called sporangia. In the presence of a favorable environment and a susceptible host and these spores can cause numerous new infections in the field and neighboring fields. They are carried by wind and water over long distances.



Blast development is favored by thick stands and high nitrogen rates which increase canopy thickness resulting in higher moisture levels but is **most severe under upland or drained conditions**. Other conditions that favor blast are light and sandy soils and fields lined with trees.



Resistance to blast is available but resistance tends to break down over time as the fungus adapts to new resistant varieties. Resistance to leaf blast is not always correlated to panicle resistance.



Blast Reactions

Very

Susceptible

CL142

CL151

CL162

CL261

Susceptible

Cheniere

Cocodrie

Jupiter

Roy J

Cypress

Moderately

Susceptible

Caffey

CL111

CL131

CL152

CL161

Neptune

Taggart

Moderately

Resistant

Jazzman

Jazzman2

Catahoula

Mermentau

Hybrids

Losses due to blast include severe reductions in yield, milling, and the cost of applying fungicides. Unlike most rice diseases blast is very explosive and can completely destroy a crop in a very short time.



Scouting or Determining Need

- Varieties with low levels of resistance should be scouted for leaf blast during the vegetative stages of growth. There are no predictive systems for rotten neck blast. Since significant damage is already done when rotten-neck or panicle blast are first detected, preventive sprays are required on susceptible varieties when blast has been detected in the area.



A number of other rice diseases can be confused with blast.



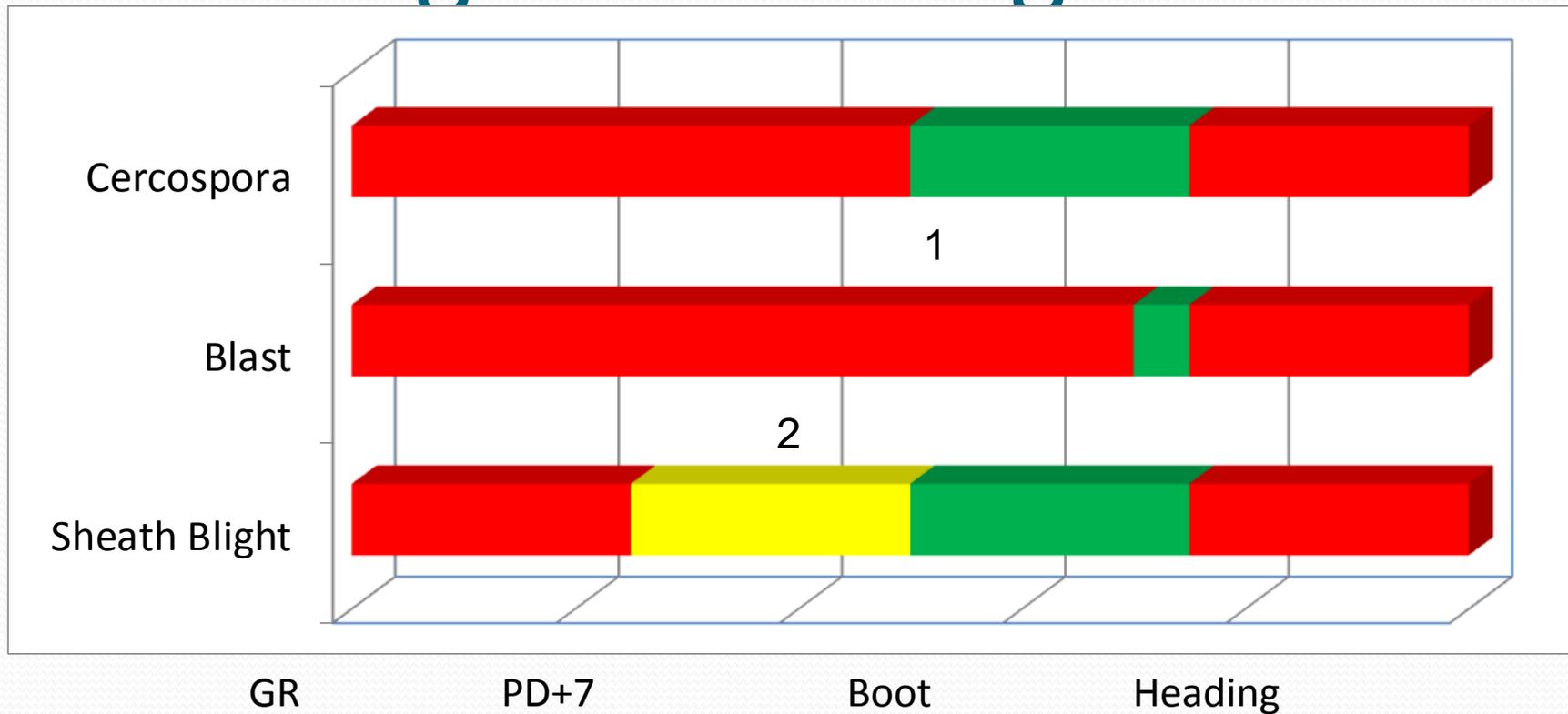
Fungicides are available to control blast. Unless plants are dying, leaf blast is not treated with a fungicide. Fungicide applications are typically applied at boot (2-4 inch panicle in the flag leaf sheath) and 50-70% heading. If only one application can be made the heading growth stage is the most effective timing. Fungicides must be applied no later than 50-70% heads emerging to be effective.



Blast Fungicide Activity

None	Good	Best
Tilt Bumper PropiMax	Quadris 9-12 oz/A 1 or 2 applications?	Gem 8-9.6 oz/A 2X?
Convoy	Stratego 14-19 oz/A	
Sercadis	Quilt 28-34 oz/A	
	Quilt Excel 15.75-27	

Rice Fungicide Timing



¹ A boot application followed by the heading spray may be necessary if diseases pressure is high and the variety is susceptible.

² An early application may be necessary if sheath blight appears early and is severe followed by the boot to heading

Management Practices

- Plant varieties resistant to blast.
- Avoid late planting.
- Plant as early as possible within the recommended planting period.
- For leaf blast, reflood if field has been drained. Maintain flood at 4 - 6 inches to ensure soil is covered.
- Do not over fertilize with nitrogen.
- Apply a fungicide if necessary.

Suggested additional sources of additional information

- Rice Varieties and Management Tips, LSU AgCenter Pub. 2270
- Rice Disease Fact Sheet, LSU AgCenter Pub. 3084
- Louisiana Rice Production Handbook, LSU AgCenter Pub. 2321
- www.lsuagcenter.com/ricediseases
- Contact your local cooperative extension agent

Louisiana State University Agricultural Center, William B. Richardson, Chancellor

Issued in furtherance of Cooperative Extension work, Acts of Congress of May 8 and June 30, 1914, in cooperation with the United States Department of Agriculture. The Louisiana Cooperative Extension Service provides equal opportunities in programs and employment. Partially funded by NIFA.