

# Commercial Crop Production

## Field Crops - Rice

**Table 1. Symptoms, source of inoculum and management of rice diseases.**

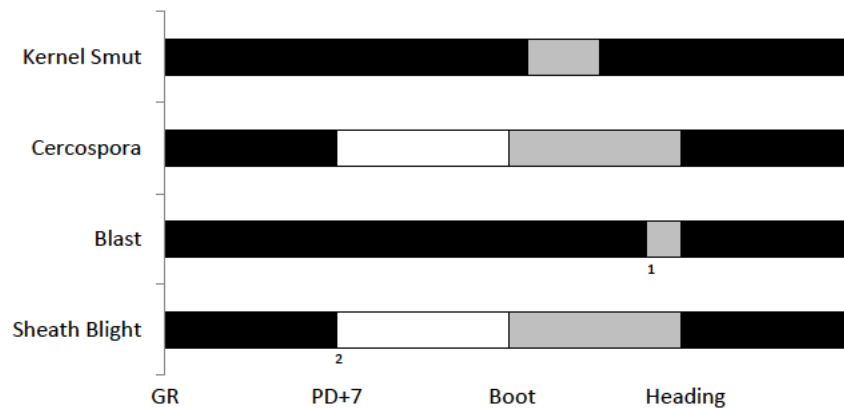
<b>Disease</b>	
<p><b>Blast</b> (<i>Pyricularia grisea</i>)</p>	<p><b>Symptoms:</b> Leaf lesions are spindle-shaped and elongated with brown borders and grayish centers. A brownish lesion on the internode at the base of the panicle causes “blasting” of heads followed by breaking over of the head to produce the “rottenneck” symptoms.</p> <p><b>Source of Inoculum:</b> Fungus may overwinter on diseased straw and stubble, or in some cases it may be carried on infested or infected seed. Source of inoculum for early infection has not been satisfactorily worked out. It spreads in the field by means of airborne spores.</p> <p><b>Management:</b> For leaf stages of the disease, maintain proper flood level. Infection levels tend to be less severe where floodwater is maintained at adequate but <u>not</u> excessive depths. Plant varieties resistant to prevalent races of the fungus. (See variety list.) Avoid excessive rates of nitrogen (Nitrogen amounts vary with cropping history, soil type, varieties, etc.). The use of fungicides will be helpful in the management of blast. Fungicide timing is critical for effective control.</p>
<p><b>Sheath Blight</b> (<i>Rhizoctonia solani</i>)</p>	<p><b>Symptoms:</b> Large spots with cream-colored centers and broad, dark reddish-brown borders appear on sheath, usually beginning near the water line. Alternating wavelike tan and brown bands can extend up the sheath. The wavelike band pattern may extend out on part or the entire leaf surface.</p> <p><b>Source of Inoculum:</b> Fungus is soilborne and persists as sclerotia or mycelia on straw and stubble of rice and grasses. Weed hosts may serve as sources of inoculum.</p> <p><b>Management:</b> Thick stands and excessive nitrogen applications tend to favor disease development. Some varieties are less susceptible than others. (See variety list.) Fungicides may be necessary to suppress disease development. Fungicide-resistant populations exist in some fields.</p>
<p><b>Brown Leaf Spot</b> (<i>Bipolaris oryzae</i>)</p>	<p><b>Symptoms:</b> Dark reddish-brown spots are somewhat circular or oval to slightly elongated. Mature spots have gray centers. Spots usually associated with low nitrogen or maturity of the plant. Spots also may occur on hulls and kernels with a dark brown fungus sometimes present on kernels.</p> <p><b>Source of Inoculum:</b> The fungus is seedborne and also may live from one crop to the next on infected rice straw and stubble. It is spread by airborne spores.</p> <p><b>Management:</b> Maintain good growing conditions through fertilization, land leveling, soil preparation and other cultural practices.</p>
<p><b>Narrow Brown Leaf spot</b> (<i>Cercospora janseana</i>)</p>	<p><b>Symptoms:</b> Leaf spots are light reddish-brown to brown, long and narrow. Reddish-brown discoloration of the sheath may occur when disease pressure is severe. Disease usually occurs after heading. The disease is usually more severe on the second or ratoon crop.</p> <p><b>Source of Inoculum:</b> The fungus persists on crop residue.</p> <p><b>Management:</b> Varietal resistance offers the best approach to control. (See variety list.) Fungicides may control narrow brown leaf spot.</p>
<p><b>Seed and Seedling Diseases</b> <b>Water Molds</b> (<i>Achlya</i> spp., <i>Pythium</i> spp.)</p>	<p><b>Symptoms:</b> Light- to dark-brown discoloration on soil surface around seed after water is removed. Usually have fluffy fungal growth around seed before water is removed.</p> <p><b>Source of Inoculum:</b> These fungi persist in the soil on organic matter.</p> <p><b>Management:</b> Removing water after seeding will reduce losses. Seeding into clear water reduces the incidence of water mold. Seed treatments may reduce damage.</p>
<p><b>Seedling Blight</b> (Several fungi)</p>	<p><b>Symptoms:</b> Young plants have roots and lower stem affected, often resulting in death of the plant. Dark lesion at the junction of seed and root.</p> <p><b>Source of Inoculum:</b> May be seedborne or soilborne.</p>
<p><b>Stem Rot</b> (<i>Sclerotium oryzae</i>)</p>	<p><b>Symptoms:</b> Black angular shaped, discolored areas on leaf sheath near surface of water. Later, small black seedlike sclerotia develop inside leaf sheath and still later inside the stem. Stalks may break over and lodge.</p> <p><b>Source of Inoculum:</b> Fungus persists in the sclerotial stage in soil and on diseased straw and stubble.</p> <p><b>Management:</b> Applications of potassium to the soil may reduce the severity of the disease in some instances.</p>
<p><b>Kernel Smut</b> (<i>Tilletia barclayana</i>)</p>	<p><b>Symptoms:</b> Black masses of spores replace all or some of the seed endosperm. Often the spores ooze out of the grain, leaving a black mass along the seam of the hulls and on leaves and stem.</p> <p><b>Source of Inoculum:</b> The fungus overwinters in soil and in seeds.</p>

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Disease	
	<b>Management:</b> Avoid high nitrogen rates. Application of propiconazole containing fungicides at boot growth stage reduce incidence.
<b>Straighthead</b> (Physiological Disorder)	<p><b>Symptoms:</b> Rice heads remain upright at maturity because of lack of grain formation. Hulls usually are crescent or “parrot beak” shaped.</p> <p><b>Source of Inoculum:</b> No organism involved.</p> <p><b>Management:</b> Drain water from field just prior to jointing stage of growth. Leave water off until cracks form in the mud. Then flood again. Some varieties are moderately resistant to this disorder. (See variety list.)</p>

### Rice Fungicide Timing



<sup>1</sup>A boot application followed by the heading spray may be necessary if diseases pressure is high and the variety is susceptible.  
<sup>2</sup>An early application may be necessary if sheath blight appears early and is severe followed by the boot to heading application.

Do not apply    
  Application may be needed    
  Best application timing

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**Table 2. Rice variety reactions to common diseases in Louisiana.**

VS = very susceptible reaction, S = susceptible reaction, MS = moderately susceptible reaction, MR = moderately resistant reaction, R = resistant reaction and — indicates that the reaction is not known. Varieties labeled S or VS for a given disease may be severely damaged under conditions favoring disease development.

Variety	Disease				
	Blast	Sheath Blight	Cercospora	Bacterial Panicle Blight	Straight Head
Cheniere	MS	S	S	MS	MR
CLJ01	MR	MS	MR	S	--
CL111	MS	VS	S	VS	S
CL151	VS	S	S	VS	VS
CL153	MS	S	MS	MS	MS
CL163	VS	S	R	MS	MS
CL172	MS	S	S	MS	MS
CL272	MS	S	S	MS	MS
CLXL745	R	MR	R	MR	MR
Della-2	R	S	MS	MS	MR
Diamond	S	S	MR	MS	MS
Gemini 214 CL	R	MR	MR	MR	-
Jazzman	R	MS	S	S	MS
Jazzman 2	MS	S	S	VS	VS
Jupiter	S	MS	R	MR	MR
LaKaste	S	MS	MS	MS	MS
PVL01	VS	S	MR	S	-
PVL02	MS	MS	MS	S	-
RT7301	MR	MS	MR	MR	---
Titan	MS	S	MR	MS	MR
XL753	R	MSLO	R	MR	MR

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**Table 3. Efficacy of fungicides in managing rice diseases.**

Efficacy categories: P=Poor; F=Fair; G=Good; VG=Very Good; NL = Not Labeled for use against this disease.

Fungicide Information					Disease			
Class and Mode of Action Group <sup>1</sup>	Active Ingredient	Product(s) <sup>2</sup>	Rate <sup>3</sup> (fl oz)	Blast	Sheath Blight	Qol Resistant Sheath Blight	Cercospora	Kernel Smut
QoI Strobilurins Group 11	Azoxystrobin	Quadris 2.08 SC Equation 2.08 SC Others	9-15.5	G	VG	P	P	P
	Trifloxystrobin	Gem 500 SC	3.1-4.7	VG	G	P	P	P
Carboxamides Group 7	Flutolanil	Elegia 3.8 F	16-32	NL	G	G	NL	NL
	Fluxapyroxad	Sercadis 2.47 SC	4.5-6.8	NL	G	G	NL	NL
Demethylation Inhibitors (DMI) Group 3	Propiconazole	Tilt 3.6 EC Bumper PropiMax Others	6-10 6-10 6-10	NL	F	F	G	G
Mixed <sup>4</sup>	Azoxystrobin, Propiconazole	Quilt 200 SC	14-34.5	G	VG	P	G	G
	Azoxystrobin, Propiconazole	Quilt Xcel 2.2 SE	15.8-27	G	VG	P	G	G
	Trifloxystrobin, Propiconazole	Stratego 250 EC	16-19	VG	G	P	G	G
	Azoxystrobin, Difenoconazole	Amistar Top	10-15	G	VG	G	G	G

<sup>1</sup>Mode of action groups are determined by the Fungicide Resistance Action Committee (FRAC).

<sup>2</sup>Reference to commercial or trade names is made with the understanding that no discrimination is intended nor endorsement of a particular product by LSU or the LSU AgCenter is implied. Many products have specific use restrictions about the amount of active ingredient that can be applied within a period of time or the amount of sequential applications that can occur. Please read and follow all specific use restrictions prior to fungicide use. This information is provided only as a guide. It is the responsibility of the pesticide applicator by law to read and follow all current label directions. Members or participants in the CDWG assume no liability resulting from the use of these products.

<sup>3</sup>Rates are the amount of formulation (product) per acre unless otherwise indicated.

<sup>4</sup>Refer to product label for the fungicide class and mode of action group.

The rice section was revised October 2019 by Dr. D.E. Groth.