

Commercial Crop Production

Field Crops - Rice

DISEASE

Symptoms, source of inoculum and management of rice diseases.

Blast (*Pyricularia grisea*)

Symptoms: 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 "rotten neck" symptoms.

Source of Inoculum: Fungus may overwinter on diseased straw and stubble, or in some cases, it may be carried on infested or infected seed. It spreads in the field through airborne spores.

Management: Late planting usually increase the risk of disease development. For the disease leaf stage, maintain proper flood level. Infection levels tend to be less severe where floodwater is maintained at adequate but not excessive depths. Plant varieties resistant to prevalent races of the fungus (see variety list.) Avoid excessive rates of nitrogen, consult the agronomic recommendations for the appropriate nitrogen rate. The use of fungicides will be helpful in the management of blast when conditions are favorable for the disease development. Fungicide timing is critical for effective control, with 50-70% heading having the best results.

Sheath Blight (*Rhizoctonia solani*)

Symptoms: 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.

Source of Inoculum: 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.

Management: Fields with historic of sheath blight problems have a higher risk of developing severe epidemics, especially if preceded by rice or soybean. 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. Strobilurin-resistant populations exist in some fields.

Brown Leaf Spot (*Bipolaris oryzae*)

Symptoms: 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.

Source of Inoculum: The fungus is seedborne and may live on infected rice straw and stubble from one crop to the next. It is spread by airborne spores.

Management: Maintain good growing conditions through fertilization, land leveling, soil preparation, and other cultural practices.

Narrow Brown Leaf spot (*Cercospora janseana*)

Symptoms: Leaf spots are light reddish-brown to brown, long and narrow. Reddish-brown discoloration of the sheath may occur when disease pressure is severe. Branches of the panicle can be infected and cause premature riping and unfilled grains. The disease usually occurs after heading. The disease is usually more severe on the second or ratoon crop.

Source of Inoculum: The fungus persists on crop residue.

Management: Late planting increases the risk of developing severe epidemics. Varietal resistance offers the best approach to control. (See variety list.) Fungicide application may be necessary to control narrow brown leaf spot.

Seed and Seedling Diseases and Water Molds (*Achlya* spp., *Pythium* spp., *Fusarium* sp.)

Symptoms: Light- to dark-brown discoloration on the soil surface around the seed after water is removed. Usually, have fluffy fungal growth around the seed before water is removed.

Source of Inoculum: These fungi persist in the soil on organic matter.

Management: Removing water after seeding will reduce losses. Seeding into clear water reduces the incidence of water mold. Seed treatments may reduce damage.

Seedling Blight (Several fungi)

Symptoms: Young plants have roots and lower stem affected, often resulting in the death of the plant. Dark lesion at the junction of seed and root.

Source of Inoculum: May be seedborne or soilborne.

Management: Seed treatments may reduce damage.

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Stem Rot (*Sclerotium oryzae*)

Symptoms: Black angular-shaped, discolored areas on the leaf sheath near the water's surface. Later, small black seedlike sclerotia develop inside the leaf sheath and still later inside the stem. Stalks may break over and lodge.

Source of Inoculum: Fungus persists as sclerotia in soil, on diseased straw, and stubble.

Management: Crop rotation and other crop residue management methods can reduce the initial inoculum overwintering. Applying potassium to the soil may sometimes reduce the severity of the disease. Avoid excessive nitrogen fertilization.

Kernel Smut (*Tilletia barclayana*)

Symptoms: 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.

Source of Inoculum: The fungus overwinters in soil and in seeds.

Management: Avoid high nitrogen rates. Application of propiconazole-containing fungicides at the boot growth stage (2-4 in panicle) reduces incidence.

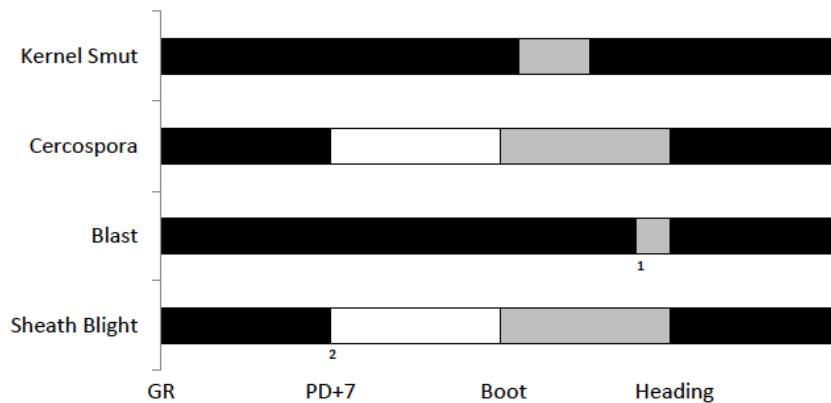
Straighthead (Physiological Disorder)

Symptoms: Rice heads remain upright at maturity because of lack of grain formation. Hulls usually are crescent or "parrot beak" shaped.

Source of Inoculum: Abiotic cause, no organism involved.

Management: Drain water from the field just prior to the 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.)

Rice Fungicide Timing



¹ A boot application followed by the heading spray may be necessary if disease 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 application.

Do not apply
 Application may be needed
 Best application timing

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Table 1. 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. See 2023 Rice Varieties and Management Tips (Pub. 2270) for updated varieties and disease reactions.

Variety	Disease				
	Blast	Sheath Blight	Cercospora	Bacterial Panicle Blight	Straighthead
Cheniere	MS	S	S	MS	MS
CL111	MR ¹	VS	S	VS	MS
CL151	VS	S	S	VS	VS
CL153	MR ¹	S	MS	MS	MS
CL163	VS	S	R ²	MS	VS
CLJ01	MR	MS	MR	S	MR
CLL15	R	S	-	VS	R
CLL16	R ¹	MS	- ²	MS	R
CLL17	R ¹	S	- ²	MR	R
CLM04	S	MS	- ²	MR	S
Della-2	R	S	MS	MS	R
DG-263L	-	S	- ²	MR	-
Jazzman	R	MS	S	S	R
Jewel	R	MS	- ²	S	R
Jupiter	S	MS	R ²	MR	S
Lynx	S	VS	- ²	S	S
Mermentau	S	S	MS	MS	S
PVL01	VS	S	MR	S	VS
PVL02	MS	MS	MS	S	MS
PVL03	MR ¹	MS	- ²	MR	MR
Titan	MS	S	MR ²	MS	MS
RT7301³	R	MR	MR	MR	R
RT7321 FP³	R	MR	-	MR	R
RT7521 FP³	R	MS	-	MR	R

¹Varieties with *Pita-2* gene, known to confer resistance to most common blast races.

²Varieties with *CEPS2.1* gene, which confers resistance to foliar symptoms of Cercospora, but infections on sheath and panicle can still occur.

³Marker data not available for RiceTec products.

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Table 2. 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 ¹	Active Ingredient	Product(s) ²	Rate ³ (fl oz)	Blast	Sheath Blight	Qol Resistant Sheath Blight	Cercospora	Kernel Smut
Qol Strobilurins Group 11	Azoxystrobin	Quadris 2.08 SC	9-15.5	G	VG	P	P	P
	Trifloxystrobin	Others Flint Extra	3.1-4.7	VG	G	P	NL	NL
Carboxamides Group 7	Flutolanil	Elegia 3.8 F	12-32	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 Others	6-10	NL	F	F	G	G
Mixed ⁴	Azoxystrobin, Propiconazole	Quilt Xcel 2.2 SE Others	14-27	G	VG	P	G	G
	Azoxystrobin, Difenoconazole	Amistar Top Other	10-15	G	VG	G	G	G

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

²Reference 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 CDVG assume no liability resulting from the use of these products.

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

⁴Refer to product label for the fungicide class and mode of action group.

The rice section was revised October 2022 by Felipe Dalla Lana.