LOUISIANA PLANT PATHOLOGY
DISEASE IDENTIFICATION AND MANAGEMENT SERIES
LSU AgCenter Research & Extension

Sheath Blight of Rice

Thanatephorus cucumeris (A.B. Frank) Donk (anamorph: *Rhizoctonia solani* Kuhn)

Sheath blight has been the most economically significant disease of rice in Louisiana since the early 1970s. The disease is caused by *Rhizoctonia solani*, a fungal pathogen of both rice and soybeans. On soybeans, it causes aerial blight.

Several factors have contributed to the development of sheath blight from minor to major disease status. They include the increased acreage planted to susceptible long-grain varieties, the increase in the acreage of rice grown in rotation with soybeans, the increased use of broadcast seeding and the higher rates of nitrogen fertilizers used with the modern commercial rice varieties. The disease is favored by dense stands with a heavily developed canopy, warm temperature and high humidity. The fungus survives between crops as structures called sclerotia or as hyphae in plant debris. Sclerotia (Fig. 1) or plant debris floating on the surface of irrigation water serves as sources of inoculum that attack and infect lower sheaths of rice plants at the waterline.

Sheath blight is characterized by large oval spots on the leaf sheaths (Fig. 2) and irregular spots on leaf blades (Fig. 3). Infections usually begin during the late tillering-joint elongation stages of growth. Lesions about 0.5 - 1 cm in width and 1 - 3 cm in length are formed a little above the waterline on infected culms (Fig. 2). Fungus mycelium grows up the leaf sheath, forms infection structures, infects and causes new lesions. The infection can spread to leaf blades (Fig. 3). The lower leaf sheaths and blades are affected during the jointing stages of growth. After the panicle emerges from the boot, the disease progresses rapidly to the flag leaf on susceptible varieties. With very susceptible varieties, the fungus will spread into the culm from early sheath infections. Infected culms are weakened, and the tillers may lodge or collapse.

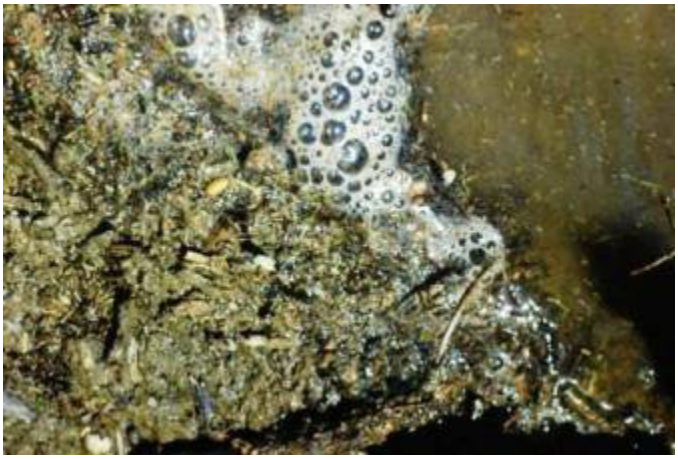

Fig. 1. Sclerotia and plant residue floating at waterline.

Fig. 2. Early sheath lesions.

The fungus can spread in the field by growing from tiller to tiller on an infected plant or across the surface of the water to adjacent plants. The fungus also grows across touching plant parts, for example from leaf to leaf, causing infections on nearby plants. Infected plants are usually found in a circular pattern in the field because the fungus does not produce spores and must grow from plant to plant.

The lesions have grayish-white or light green centers with a brown or reddish-brown margin (Fig. 2). As lesions coalesce on the sheath, the blades turn yellow-orange and eventually die. As areas in the field with dead tillers and plants increase, they may coalesce with other affected areas to cause large areas of lodged, dead and dying plants. Damage is usually most common where wind-blown, floating debris accumulates in the corners of cuts when seedbeds are prepared in the water.

Sheath blight also affects many grasses and weeds other than rice, causing similar symptoms. Sclerotia that survive between crops are formed on the surface of lesions on these weed grasses, as well as on rice and soybeans. The sclerotia are tightly woven masses of fungal mycelium covered by an impervious, hydrophobic coating secreted by the fungus.

Disease severity can be reduced by integrating several management practices. Dense stands and excessive use of fertilizer both tend to increase the damage caused by this disease. Broadcast seeding tends to increase stand and canopy density. Rotation with soybeans or continuous rice increases the amount of inoculum in field soils. Fallow periods, with disking to control growth of grasses, will reduce inoculum in the soil. The pathogen also is known to infect sorghum, corn and sugarcane when environmental conditions are favorable for disease development.

Fig. 3. Irregular lesions on leaves.

Medium-grain rice varieties are more resistant to sheath blight than most of the long-grain varieties. Several recently released long-grain varieties are more resistant to sheath blight than the older long grain varieties (See LSU AgCenter publication 2270, "Rice Varieties and Management Tips").

Fungicides are available for reducing sheath blight. Ask an LSU AgCenter extension agent in your parish for the latest information on fungicides for sheath blight management.

Visit our Web site: www.lsuagcenter.com

Authors

Department of Plant Pathology and Crop Physiology
Clayton A. Hollier, Ph.D., Professor
M. Charles (Chuck) Rush, Ph.D., Professor

Rice Research Station
Donald E. Groth, Ph.D., Professor

Louisiana State University Agricultural Center
William B. Richardson, Chancellor
Louisiana Agricultural Experiment Station
David J. Boethel, Vice Chancellor and Director
Louisiana Cooperative Extension Service
Paul D. Coreil, Vice Chancellor and Director

Pub. 3123 (online only) 5/09