

LOUISIANA PLANT PATHOLOGY

DISEASE IDENTIFICATION AND MANAGEMENT SERIES

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Water Mold and Seed Rot of Rice

Achlya conspicua Coker, *A. klebsiana* Pieters, *Fusarium* spp.,
Pythium spp., *P. dissotocum* Drechs., *P. spinosum* Sawada

When using the water-seeding method of planting rice, it is difficult to obtain uniform stands of sufficient density to obtain maximum yields. The most important biological factor contributing to this situation is the water mold or seed rot disease complex caused primarily by fungi like *Achlya* spp. and *Pythium* spp.

The disease is caused by a complex of these fungi infecting seeds. The severity of this disease is more pronounced when water temperatures are low or unusually high. Low water temperatures slow the germination and growth of rice seedlings but do not affect growth of these pathogens.

During the 1970s and 1980s, an average of 45 percent of water-planted seeds were lost to water mold. In addition to the direct cost of the lost seeds and the cost of replanting, water mold also causes indirect losses through the reduced competitiveness of rice with weeds in sparse or irregular stands.

Water mold can be observed through clear water as a ball of fungal strands surrounding seeds on the soil surface (Figure 1). After the seeding flood is removed, seeds on the soil surface typically are surrounded by a mass of fungal strands radiating out over the soil surface from the affected seeds (Figure 2). The result is a circular copper-brown or dark green spot about the size of a dime with a rotten seed in the center (Figure 3). The color is caused by bacteria and green algae that are mixed with the fungal hyphae.

Achlya spp. normally attacks the endosperm of germinating seeds, destroying the food source for the growing embryo and eventually attacking the embryo. *Pythium* spp. usually attacks the developing embryo directly. When the seed is affected by the disease, the endosperm becomes



Figure 1. Hyphal strands radiating from seed with water mold



Figure 2. Typical water mold signs and symptoms

liquefied and oozes out as a white, thick liquid when the seed is mashed. If affected seeds germinate, the seedling shoot and root are attacked, and the seedling is stunted. When infection by *Pythium spp.* takes place after the seedling is established, the plant is stunted, turns yellow and grows poorly.

If the weather is favorable for plant growth, seedlings often outgrow the disease and are not severely damaged. The disease is less severe in water-seeded rice when weather conditions favor seedling growth. Temperatures averaging above 65 degrees favor seedling growth, and water mold is less severe. Seeds should be vigorous and have a high germination percentage. Seed with poor vigor will be damaged by water mold fungi when water-seeded. Treat seed with a recommended fungicide at the proper rate to reduce water molds and seed diseases.



Figure 3. Water-soaked symptoms of water mold

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