

# Aggregate Sheath Spot Disease of Rice

## IDENTIFICATION GUIDE

Aggregate Sheath Spot, also known as brown sclerotial disease has been reported in Japan, China, Vietnam, Thailand, India and California. All California cultivars are susceptible to Aggregate Sheath Spot disease.

### CAUSAL ORGANISM

Aggregate Sheath Spot is caused by the fungus *Rhizoctonia oryzae-sativae* (Sawada) Mordue. The fungus produces globose

sclerotia on the surface of infected rice leaf sheaths as well as cylindrical sclerotia inside the cells of infected tissue. The sexual stage is *Ceratobasidium oryzae-sativae* P.S. Gunnell & R. K. Webster. This state occurs on the outside of leaf sheaths as an inconspicuous effuse whitish layer.

### SYMPTOMS

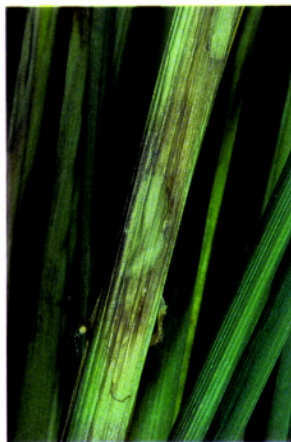
Aggregate Sheath Spot infections first appear as characteristic oval lesions

with a grayish green to straw colored center surrounded by a distinct brown margin (FIG 1). Often the lesions expand, forming a series of concentric bands (FIG 2). Initially lesions occur on the lower leaf sheaths at the water level. As the disease progresses, lesions are produced vertically up the rice plant to the upper leaf sheaths (FIG 3). The fungus may infect the base of the leaf sheaths (FIG 4). Leaf

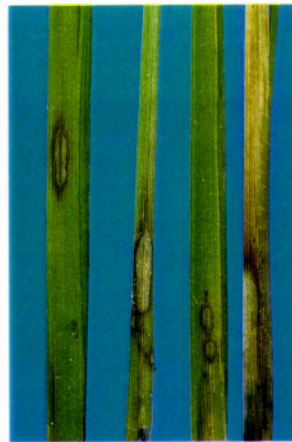
(continued on reverse)



**FIGURE 1** Aggregate Sheath Spot symptoms first appear as oval lesions with grayish green to straw colored centers surrounded by a distinct brown margin.



**FIGURE 2** Lesions expand and may appear to coalesce.



**FIGURE 3** Additional lesions are produced above the initial infections and continue to form up the tiller as the season progresses.



**FIGURE 4** Spreading lesions and infection at base of leaf sheaths.

blades of diseased tillers often turn bright yellow and then die (FIG 5) In some cases the fungus causes a culm rot (FIG 6) or infects the panicle rachis resulting in sterile grains or partially filled heads. When severe infection of the rachis occurs, the panicle does not emerge from the boot (FIG 7). Sclerotia of *R. oryzae-sativae* are produced in infected tissues as the plants approach maturity and continue to form after harvest in residue left in the field (FIG 8).

#### DISEASE CYCLE AND EPIDEMIOLOGY

*R. oryzae-sativae* survives between rice crops as

sclerotia in soil or associated with crop residues. Sclerotia float to the surface of paddy water during planting and infect the rice plant at the water surface. Excess nitrogen fertilizer does not favor disease development as is the case with Stem Rot. Development of lesions vertically up the infected tillers is favored by free moisture resulting from dew deposition. When the disease does not progress up the plant and infect the rachis and panicles, it has little effect on yield. The importance of Aggregate Sheath Spot was enhanced with the introduction of the semi-dwarf cultivars and has

increased with the practice of incorporating residue.

#### AGGREGATE SHEATH SPOT DISEASE MANAGEMENT

The most effective means of reducing Aggregate Sheath Spot is to limit the carry over inoculum as is the case with stem rot. Residue management similar to that for stem rot management is the most effective. Growers who use Quadris in attempts to control the disease should closely follow instructions on the product label.

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*R.K. Webster, Department of Plant Pathology  
University of California, Davis  
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**FIGURE 5** Bright yellow flag leaf of tiller with lesions below the leaf collar.



**FIGURE 6** Culm rot with sclerotia produced inside the affected tissue.



**FIGURE 7** Infection of the "boot" resulting in the panicle failing to emerge.



**FIGURE 8** Sclerotia of *R. oryzae-sativae* produced in infected tissue.