

ANTHRACNOSE

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This summer a new disease problem attacking "Poa" (*Poa annua*-annual bluegrass) was identified on golf courses. That is not to say anthracnose (*Collectotrichum graminicola*) is a previously unidentified problem for it is reported in the literature, but while the disease has been reported before, its importance has been overlooked, or more correctly stated, the damage done to "Poa" by anthracnose has been blamed on other factors: *Pythium*, *Helminthosporium*, and high temperature. It was not uncommon to go on a golf course this summer and hear a superintendent say "Pythium has wiped out my fairways" or "Helminthosporium has wiped out my fairways" and "I treated it with this or that and it didn't help". Nor was it uncommon to walk on a golf course and hear someone say "Look, I can't apply any more water, the fairways are saturated and they're still wilting" or "I have even syringed in the middle of the day and they are still wilting". The reason the *Pythium* and *Helminthosporium* fungicides didn't work was because neither was the problem. The reason excess water and syringing didn't work was because the grass was not wilting. If anything, the excess water contributed to the anthracnose problem.

The one characteristic symptom of "Poa" infected with anthracnose is its' yellow appearance. When Poa or any grass wilts, it turns dark blue to purple in color, and yet this summer, superintendents were talking about their "Poa" turning yellow and wilting.

What is anthracnose? It is a weak pathogen that can attack "Poa", Kentucky blue, and red fescue under stress. It appears to attack during cool as well as warm weather. The yellowing is present under cool or warm weather but death of the grass plant occurs in hot, humid weather conditions.

Most of the stress on "Poa" came from the high temperatures this summer. The disease in "Poa" was worse in heavy soil, compacted areas, and heavy traffic areas or hill sides. In one case excess nitrogen fertility was also attributed to symptom development. In Kentucky bluegrass, shade and short root systems contributed to the severity of the disease.

How can the disease be properly identified in the field? By the black fruiting bodies (acervulus, acervuli pl.) of the fungus, with spines (setae) protruding from them, which are present in the infected tissue. The black bodies can be found in the green or chlorotic tissue (yellow) when the disease is moving rapidly during warm weather but they are more commonly found in the dead tissue.

Control. Only eradication experiments were conducted, since the studies were not initiated until after the disease had been discovered. The benzimidazole systemic fungicides (Tersan 1991, Fungo 50, Cleary's 3336, Scotts DSB & Fertilizer) at the 2 oz. rate gave the best control. Rates of 1 oz/1000 sq. ft., while effective, did not give as good control as the 2 oz rate. Four and 8 oz/1000 sq. ft. rates also gave excellent control but the cost is prohibitive. One or two applications of the contact fungicides at 2 week intervals was not very effective. Tersan 75, Tersan LSR, Fore and Daconil 2787 at a 6 or 8 oz. rate were the best of those tested. Perhaps shorter intervals would work better but this becomes very expensive in both material and labor.

Many fairways prior to treatment had lost 50 to 75% of their turf. Ten days to two weeks after treatment they had recovered indicating that the crowns of the plants had not been killed by the anthracnose fungus. The roots of these treated annual blue-

grass plants were up to two inches in length in spite of the fact the day-time temperatures were in the high 80's and low 90's. In the untreated controls the annual bluegrass roots remained shallow to the point where the turf could be easily torn out. Preliminary evidence would indicate that much of what has been previously called high temperature killing of "Poa", Helminthosporium, and Pythium was in fact due to anthracnose.

If next summer is hot and humid, or if you are in an area that always has hot humid summers, I would suggest you apply 1 oz/1000 sq. ft. of a systemic fungicide when the weather starts to go above 85°F. This should last for 4 weeks. Then I would apply Tersan 75, Tersan LSR, Fore or Daconil 2787 at a 6-8 oz. rate followed a week later by an additional ounce of a systemic fungicide. Applied as a preventative, one ounce should be sufficient.

Why the contact fungicide if the systemics are so effective? Because resistance to the systemic fungicides has developed for every major pathogen on which it was used. This includes Colletotrichum spp. on other crops. There is no reason to believe it won't happen here and if it does happen on your course, you will have to spray every 3 to 7 days with 6 to 8 ounces of a contact from July through August to prevent anthracnose.