A HISTORICAL LOOK AT HOME LAWN DISEASES – PART II

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By 1970, older cultivars such as 'Merion', 'Windsor' and 'Fylking' that were resistant to melting out were now falling prey to stripe smut. To prolong the marketability of existing seed stocks and production fields, they were no longer planted in monostands but were blended with other cultivars that had stripe-smut resistance. Notable among these were 'Campus', 'Delta', 'Newport', 'Park', and 'Delft' (see A Historical Look at Home Lawn Diseases – Part I in 71st Annual Michigan Turfgrass Conference Proceedings, Volume 30).

Another disease was first reported back in 1966 by Houston Couch, who was then at Penn State and is now at Virginia Tech. He named it *Fusarium* blight claiming that the disease was caused by at least one species of the *Fusarium* genus of fungi. It was not until after the advent of improved cultivars that the disease began causing appreciable damage. Prior to that, it was not typically a problem since the Kentucky bluegrasses were being regularly decimated by melting out.

The procedure for determining the cause of an infectious disease was set forth by Robert Koch, a 19th Century German scientist who, ironically, first used the method to diagnose anthrax as being caused by a bacteria, *Bacillus anthracis*. Koch's postulates are that an organism is the cause of an infectious disease, if the following steps are performed:

1) An organism is isolated from a host that is suffering from a particular disease,

2) The organism is grown *in vitro*, or cultured in the laboratory,

3) The organism is used to infect another host, and that host develops symptoms of the same disease, and

4) A like pathogen is isolated from the second host.

During the late 1970s, attempts by Joe Vargas at Michigan State University to affirm *Fusarium* as the causal genus were unsuccessful. While the disease in question caused "frog-eye" symptoms in the field, they were not manifested by the *Fusarium* isolates; only leaf lesions were seen during Step 3 above.

Finally, in the mid-eighties, Gayle Worf at Wisconsin determined that the disease symptoms were caused by another fungi, *Leptosphaeria korrae*, and renamed it necrotic ring spot. This disease is primarily restricted to Kentucky bluegrass, but it has also been reported on other species of *Poa* as well as red fescue and bentgrass. In addition, it is one of the incitants of spring dead spot, a major disease of bermudagrass, which can also be effected by *Ophiosphaerella herpotricha* and *Gaeumannumyces graminis*.

Also during this period, Richard Smiley at Oregon State University reported that another fungus, *Phlialophora graminicola*, was causing the same disease, which he called summer patch. Later, in 1990, the pathogenicity of *P. graminicola* on Kentucky bluegrass was disproved jointly by Peter Landschoot at Penn State and Noel Jackson at the University of Rhode Island. Instead, they determined that *Magnaporthe poae* was the causal organism for summer patch; they chose not to change the name of the disease. In Michigan, summer patch is not a problem on Kentucky bluegrass, but it is very much so on annual bluegrass greens and fairways. In summary, what was formerly known as *Fusarium* blight is now called either necrotic ring spot or summer patch, depending on its pathogen.

Fusarium is primarily a saprophyte that can become a parasite under certain conditions. It has been falsely blamed for another turfgrass disease, pink snow mold, which is now correctly called *Microdochium* patch because it is caused by *Microdochium nivale*. *Fusarium* is culpable for one of the seedling diseases of turfgrasses, however, the most damaging of these are caused by either *Pythium* or *Rhizoctonia*.

In the late eighties and early nineties, Joe Vargas and Brad Melvin, one of his graduate students, compared different cultural practices aimed at limiting necrotic ring spot activity. Their findings form the basis for MSU's integrated program for necrotic ring spot management, which is detailed below and are applicable throughout the growing season.

- Light, daily irrigation of 1/10 to 1/6 inch per day, depending on soil type,
- Monthly fertilizer applications that provide one pound of nitrogen per one thousand square feet, with a majority of the nitrogen being in a slow-release form, preferably a natural organic,
- Aggressive aerification in turf established from sod, and
- Reestablishment with resistant cultivars, such as, 'Monopoly', 'Eclipse', 'Mystic', 'Baron', 'Glade', and 'Midnight'.

Observations have shown that turf managers should expect appreciable turf damage from necrotic ring spot if either the fertilizer or the irrigation regime is compromised, especially during and following hot, dry summers.

Note: The author thanks Dr. Joe M. Vargas, Jr. and Ron Detweiler of the Department of Plant Pathology at Michigan State University for their recall of some of the events described in this article.