The Latest in Pathology Research Around the Country

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At the national plant pathology meetings this year, there was more attendance and participation in the sessions on turf than ever before. Even though there are not as many turf pathologists as agricultural pathologists in the U.S., I think interest in this area is growing. And the quality of the research work currently in progress around the country is excellent. Here are results from recent research reported at the meetings this year.

• From Rutgers University, D.C. Thompson and associates report successful suppression of summer patch disease (caused by the fungus *Magnaporthe poae*) with fertility management. The group looked at the impact of nitrogen (N) source, timing and rate on the disease and found that ammonium N provided the greatest amount of suppression, followed by sulfur-coated urea and ureaform. Urea and methylene urea resulted in intermediate level of disease, and nitrate N resulted in the highest disease severity. The effect of the nitrogen source was probably due to how it affected soil pH. If the soil pH was decreased to 6.0 or below, little disease was observed. Evidently the pathogen is affected directly, because it was difficult to detect it after 3 years of ammonium N application. I believe these studies have direct application to our problems with take-all patch on creeping bentgrass. Wayne Kussow and I have started a project to look at how different fertilizers affect soil pH and other soil and plant properties, and how this affects diseases such as take-all patch.

• At the University of Nebraska-Lincoln, turf pathologists headed by L.J. Giesler looked at how brown patch disease (caused by the fungus *Rhizoctonia solani*) spread in turf planted at different seeding densities. They thought the environment around turf canopies of different densities would be different, and some would be better for brown patch development than other environments. So they measured canopy temperatures, leaf wetness duration, relative humidity and canopy air temperature. Interestingly, the environment was very similar, but brown patch was still much worse in turf planted at high densities than low densities (this particular study was on tall fescue). The researchers concluded that the fungus can simply grow more easily from blade to blade at high seeding densities. At the O.J. Noer facility, we have observed much more severe dollar spot at high bentgrass seedling densities. It's becoming clear that seeding density can play a role in future disease problems. Now we are learning that this may be because the fungi have an easier time growing from leaf to leaf in high density plantings. I suspect that plants are also less vigorous at high seeding densities, and are less able to resist pathogen entry.

• Also from Rutgers, K.A. Plumley and B.B. Clarke looked the temperature and moisture preferences of three patch fungi *Gaeumannomyces incrustans* (a take-all pathogen), *Leptosphaeria korrae* (necrotic ring spot pathogen) and *Magnaporthe poae*, which causes summer patch. We know little about when and how these troublesome pathogens grow in nature. They found that *G. incrustans* and *M. poae* prefer somewhat warmer temperatures around 85F, while the optimal temperature for the necrotic ring spot fungus was 75F. At optimal temperatures, all the fungi could grow under very dry conditions. If temperatures were much warmer or much cooler than their optimal temperature, the fungi stopped growing at about -20 bars, which is still much drier than plants would tolerate. Thus it looks like these fungi can continue to grow in very dry soil. Maybe this explains why we see symptoms of patch diseases during drought episodes, when the plants are under moisture stress, but the fungi still grow.

• Lee Burpee, at the University of Georgia, and his student A.H. Icard evaluated the response of 15 cultivars of creeping bentgrass to Pythium foliar blight (also called greasy spot) in 1993. In 1992 they evaluated 18 cultivars. In 1992, they found that Putter, Cobra, Cobra Late, Penneagle, Emerald, Providence and National were the most resistant cultivars, and Penncross was the most susceptible. In 1993, differences among the cultivars were not visually detectable. However, when they used a remote sensing technique that picked up damaged tissue not visible to the eye, they observed that Providence, Penneagle, Putter, Emerald, Syn-1, Syn-3, Forbes 89-12, SR 1020, JH Bent, and Cobra were less diseased than Penncross, Pennlinks, Cobra Early, Cobra Late, Syn-4 and National.

Dr. Burpee will be a featured speaker at the 1995 Turfgrass and Greenscape EXPO this year on January 3 and 4, 1995. See you there for much more of the latest in turfgrass research!