

Watching Your Tees & Q's

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A SHIFT IN SOIL FUNGI POPULATION

Did you ever think of the soil fungi having a balance of good and bad types? So whenever a disease appears, there might have been an off balance of good fungi (soil antagonistic fungi) and the bad species (turfgrass pathogens) which gain the upper hand. Of course this is only theory, but there have been several observations by both turfgrass managers and researchers, which indicate this.

It has already been observed that an antibody known as *Trichoderma* spp. has been consistently found in soil cultures with *Rhizoctonia* spp. (Brown Patch). It has been suggested that the *Trichoderma* helps control Brown Patch. For this reason long range studies by university pathologists have already begun.

There have been other observations which indicate the existence of natural control of turfgrass pathogens. *Pythium* spp. has long been observed in newly planted sandy sterilized soils and soil mixes. An example would be a new golf course green. As a golf course green ages over a period of several years, soil antagonistic fungi build up which reduces *pythium*. This will continue until a large amount of organic matter is accumulated and soil water and temperature favor the *pythium*. At that time *pythium* will recolonize faster than soil antagonistic fungi.

In Florida, observations have been made of *pythium* in sandy root zones with very little organic matter less than three years of age. On the other end of the curve, in Iowa's observations by researchers have suggested that a *pythium* population in a sandy based golf course green was reduced with age (over four years). In essence, there could be a time when natural control is possible by soil antagonistic fungi. One reason *pythium* makes a good example is that it is a delicate organism that is constantly changing population in the soil. They are co-existing orga-

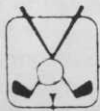
nisms and will often be expressed after the turfgrass becomes weakened.

Soil antagonistic fungi or antibodies keep turfgrass pathogens in balance by several methods. Some are hyperparasites or in other words are parasites to turfgrass fungi (which are plant parasites). Others produce a toxin which suppresses soil fungi. Again, one can only speculate on how much natural control, soil antagonistic fungi produce.

Another example of a population shift has been observed with *Sclerotinia* spp. (Dollarspot). It has been suggested that natural mutation can cause the development of fungicide resistant forms. This would be more noticeable on golf course greens after continual application of the same fungicide.

All good agronomists practice the switching of brands of fungicides during seasonal disease prevention. However, did you ever consider how broad spectrum a broad spectrum fungicide can be. For you old timers, did you ever notice the long term residual control of the arsenical and mercury based compounds. With these fungicides, both soil antagonistic fungi and turfgrass pathogens were controlled for long periods of time. With newer less residual contact fungicides, both the antagonistic fungi and the pathogens are controlled, but sometimes the pathogens recolonize faster than the antagonistic fungi.

With the summer disease season approaching, the chemical storage rooms will soon be stocked with bulging bags of fungicides. Decisions on which one to use should cause a lot of heads to be scratched. The final decision on the continual use of a broad spectrum fungicide will have to be critically evaluated. ■



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