

# PROSCAPE

By Michael Hurdzan, Ph.D., golf course designer and consultant

**Q:** How can a home owner really have a turf disease program — self applied — with such complexities of identification, fungicide availability, and almost an after-the-fact situation? S. G. E., Allentown, PA.

**A:** Properly diagnosing and treating turfgrass diseases is perhaps one of the most perplexing tasks for a professional turf manager, let alone the average homeowner. This problem is becoming more acute as plant pathologists learn more about specific organisms, fungicide resistant strains, and pathogenic complexes involving more than one organism.

At a recent Turfgrass Pathological Symposium, a speaker showed several slides of what appeared to be the same disease symptom and then explained that the typical 'frog-eye' spots were caused by 4 distinctly different fungi. The point he made so dramatically was that physical symptoms are not a reliable means of identifying the causal organism. It has been known for sometime that identification by symptoms alone has weaknesses, thus, more recently it has become vogue to attempt identification by examining diseased tissue under a microscope.

Through microscopic inspection one is able to see and identify fungal organisms by characteristics of the mycelial mass or it's fruiting bodies. However, even this technique has limitations for it presupposes if a certain organisms is present or identified, it may be the causal agent. In fact the identified agent may only be causing a secondary infection to the already weakened plant.

The only certain way to identify a disease is to isolate the probable causal factor in the laboratory and then re-infect healthy plants under the same conditions that existed during the initial infection and see if the disease re-manifests itself. Obviously this is time consuming, expensive, and requires a great number of trained people and laboratory equipment. In time, short cut methods of disease identification will be developed so that the person in the field can make positive identification.

At this point you may be asking why should one be so concerned about such specific identification when all you really want to know is which chemical should you apply to stop the disease. The reason is certain chemicals are more effective against certain diseases than are others, and by having a specific identification of the target population, one may apply the proper chemical at the proper rate, under the proper conditions. This makes sense monetarily, ecologically and in terms of general overall efficiency. Thirdly, more fungicide-resistant strains of common disease are being identified so that the problem of applying the right chemical is critical. The fungicide that worked last month may be completely ineffective this week. With proper identification the resistant strain may be properly treated.

The professional turf manager should train himself and his crew to recognize the earliest

symptoms of the diseases, to verify on a secondary basis that the suspected organism is present by microscopic inspection, and then to send a sample of the diseased tissue to a diagnostic lab. If time permits wait for the lab results. If the disease is active, the turf manager must evaluate the evidence he has and make a decision about which chemical to apply. If the disease stops, then all is well but should not be forgotten.

The professional turf manager will use the lab results to check himself and his diagnostic techniques. Thus each infection becomes a learning experience and soon his ability to make more accurate identification will improve. In addition, records should be kept on the specific disease identified, the chemical applied and it's rate, the weather conditions, and notes on the progress of the disease. With the marvel of computer science and a large number of carefully kept records, perhaps plant pathologists could develop a model that would aid in disease identification, occurrence and treatment.

For the homeowner, who was the point of this question, the problem is even more complex for he has neither the time, money, or education to properly implement a self-applied disease program. In addition, most of the fungicidal chemicals are legally unavailable to him. (Perhaps one day we will have lawn doctors who will have office hours to look at diseased samples of turf, write a prescription for a chemical cure that is filled at a garden store pharmacy, so the homeowner may legally get the fungicide for application to his sick lawn.) Therefore the homeowner must attempt to reduce incidences of home lawn diseases by practicing a total management system of preventative maintenance. These include controlling thatch by de-thatching and topdressing, planting disease resistant varieties of lawn grass, keeping fertility levels at balanced and adequate levels, controlling soil water by installing drainage and/or using proper irrigation practices, and following accepted mowing practices.

The homeowner may also employ a professional and licensed company to apply fungicide on either a preventative basis or on an emergency curative basis. But it is assumed that this company will use the same process described above for the professional turf manager and not just take the shotgun approach. Remember Murphy's Law that says "what we abuse today, will be restricted tomorrow; especially chemicals." **WTT**

*In the August issue, the editor chose to remove an unscientific part of my answer on locating pipes under the soil surface. Upon my request, Shank finally broke down and agreed to print the portion of my answer which follows. If you have had any success with the art of divining, write my skeptical friend and let him know it works.*

But, the easiest and fastest way of finding lost

plastic tile or pipe is to use "magic" and witch them. Most of us scoff at dowzers who claim to be able to find underground water sources using a forked stick; but don't laugh until you at least try the following method for finding tile and pipe. Take 2 pieces of steel wire (coat hangers work well) that are about 18" long and form them into a L shape by putting a 90° bend in each wire about 6" from the end. Now hold one wire in each hand by the 6" section with your hands comfortably in front of you with the palms facing each other and the 12" section of wire pointing to your front. Loosely hold the wires so that they are free to twist in your hands. Now go to a known location of a tile or water line and holding the wires as described, start back about 15 feet from the know line and walk at right angles to it. As you slowly approach the line the wires should turn freely in your hands and will cross when you are directly over the known line. Back away from the line and the wires should uncross, reapproach it again and they should again cross. Practice a couple times to get the feel of it and then set off to find illusive tile and water lines. After using the wires to find the general location,

now I usually use a steel probe and I probe on 1-2" center where the wires crossed to find the lost pipe or tile. **WTT**

*I always reserve the last word. There are many respected dowzers in the world, and there are many hacks. Science just makes it easy to tell the difference. If you want to try this "magic" yourself, that's certainly your business. Just be careful when hiring someone to do it for you. Also, be careful when probing with a metal rod. Most irrigation lines also lay next to electrical lines. Older wires may not be insulated like when they were new. I hate to lose subscribers. The skeptical editor.*

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