

Collecting & Sending Diseased Turfgrass Samples To A Lab

by Peter H. Dernoeden, University of Maryland

Most Land Grant Universities provide plant disease diagnostic services. Many of these laboratories, however, are not staffed by pathologists trained to diagnose turfgrass diseases. Few, if any labs, are able to identify virus diseases of turfgrasses. Some universities and all private labs charge a fee. Hence, it is prudent to choose a laboratory that you have confidence in, but it is equally important that samples are properly collected and shipped. As time is always an essential factor in treating turf diseases, samples must be transported as rapidly as possible. Either direct transport or overnight express shipment is preferable. Most turf pathologists at universities have little or no daily responsibilities in plant disease labs or clinics run by the cooperative extension service. Hence, if you wish for a particular specialist to handle your problem it is wise to contact that individual by telephone prior to shipping samples. Otherwise, the turfgrass specialist may be out-of-town or

have other commitments that preclude a rapid handling of your sample. If shipping by express mail never ship on Thursday, Friday or Saturday, as samples arriving over a weekend or holiday will not be processed until the following Monday or workday. Samples received on Friday cannot be incubated or properly examined until Monday.

The pathologist should receive fresh samples in good condition. Samples must be collected while the disease is actively injuring or causing a decline of the turf. Samples collected even a few days after disease activity has subsided may yield negative or misleading information. Avoid sending dead plants or samples from turf areas recently treated with fungicides. Samples should also be clearly marked on the outside of packaged soil or turfplugs, and ideally should be accompanied with a sample submission form from the lab or a letter that provides the information outlined below. The form letter should be placed in a

separate plastic bag.

1.) Turf Species and Site Affected

- a. Green, tee, fairway, lawn, athletic field, etc.
- b. Full sun, partial shade, heavy shade
- c. Soil often wet or dry
- d. Soil type and pH; is soil compacted?
- e. Name of cultivar and age of turf, if known
- f. Mowing height and frequency

2.) Symptoms and Environmental Conditions

- a. Describe symptoms (e.g. circular patches; diffuse thinning; color changes), and distribution (e.g. widespread, localized, scattered)
- b. Describe conditions just prior to and during the period when injury became evident

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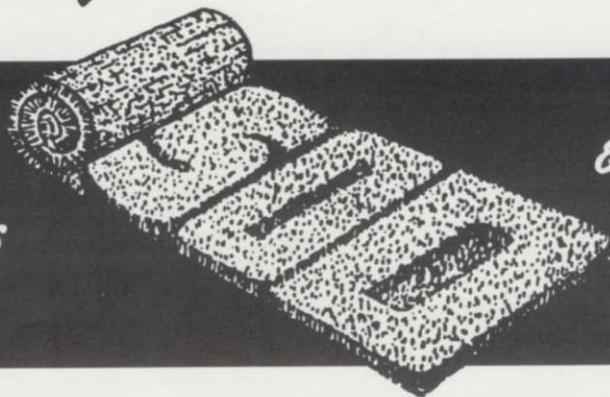


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c. Date symptoms first appeared and date of sample collection

3.) Cultural and Chemical

a. List all pesticides applied to the site within 21 days prior to appearance of symptoms

b. Note the total amount of N-P-K applied in the last 12 months and soil pH b. Irrigation frequency; amounts and time of day

4.) Polaroid Photographs

a. Close-up photo's and photos taken from a standing position are particularly useful

Sod pieces the size of a book or a cup cutter size plugs are ideal for situations where a fungal or bacterial disease, environmental stress or chemically damaged tissue is suspected. Virus diseases of turf are diagnosed by host symptoms and not by serological DNA-based techniques. Bacterial diseases are relatively uncommon in turf, and are primarily diagnosed by sectioning tissue and searching for streaming oozes of bacterial cells. Bacteria are identified based on colony growth characteristics on specialized bacteriological media; staining (i.e. Gram stain) character; and ability to grow in absence of oxygen (anaerobic growth).

Two or more plugs should be carefully selected from areas where both early and advanced symptoms are evident. Each plug should contain dead tissue (if present), and some healthy

appearing plants. The majority of the sample, however, should contain various stages of unhealthy, declining or blighted tissue. Plugs should be taken to a soil depth of about two inches. Send only soil that is clinging to roots; don't stud deep plugs where there is a conspicuous cleavage zone beyond which roots do not penetrate. The only exception would be if black layers are evident from putting greens. Plugs should be collected when soil is moist, but well drained and not in a muddy or soggy condition. Samples should then wrapped in an inner, damp paper towel followed by an outer wrapping of aluminum foil. Do not box plugs that are loose or unbound in paper bags or newspaper. Aluminum foil is preferred because it helps ensure that soil and roots remain intact during transit. Plugs wrapped in paper or crowded into large plastic bags normally arrive as a loose mass of soil mixed on top and within the turfgrass canopy. Broken plugs with soil mixed into diseased foliar tissue greatly impedes the pathologist, and may be cause for an improper diagnosis. Before packing the foil-wrapped plugs, insure that field identification information is securely fixed to the outside of the foil. Obviously, if diseased turf samples are being hand delivered they would not have to be as carefully wrapped. However, samples shipped express or overnight mail should be foil wrapped and packed with newspaper or appropriate packing material to prevent tumbling and breaking-up of plugs. Package the samples for transport as if they were glass or some other breakable object.

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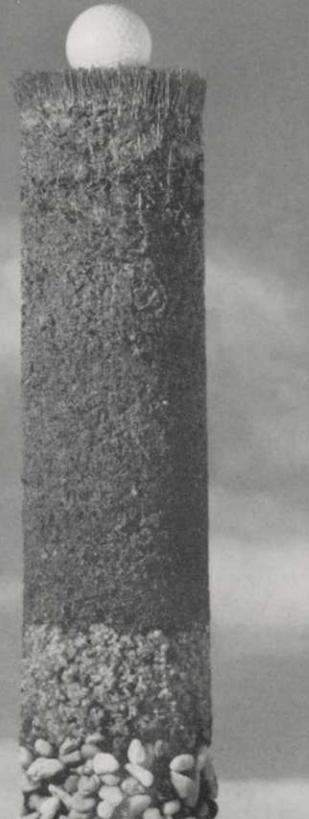
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A Glimpse of the Past...

by Lee C. Dieter, CGCS

I've had some thoughts since my retirement last year about our association. Founded in 1928, the Mid-Atlantic Association of Golf Course Superintendents is seventy (70) years old this year. Another milestone to mark this year is the 50th Anniversary of our newsletter. A few of you may even know the names of our founders, past presidents, board members or newsletter editors from these earlier years.

We've had National Presidents and committee members that worked for our profession and GCSAA on the national level. Golf champions, speakers, educators, commercial representatives and others also served our group of greenskeepers in the early years. Most of the problems in growing grass today are the same today, although the tools we have now are more formidable.

The articles I'll be writing will address these thoughts, problems and personalities. Perhaps we will all learn more from the past and will gain a sense of history and appreciation for those who have gone before us. These Greenskeepers from the past are those who have raised our profession to a level it has attained today. Hopefully today's superintendents will realize that they must not sit back and rest on the efforts of the past if we are to have a great future; a future as true professionals.

Lee Dieter will be writing columns about the past in future issues. He currently is working with a committee dedicated to the history of our Association and the GCSAA as well.

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In the laboratory, most samples are incubated overnight in a humidity chamber, particularly if a foliar pathogen is suspected. For most diseases a diagnosis is generally made within 48 hours of receiving a fresh, properly collected and shipped sample. If the pathologist must first attempt to isolate a possible, pathogen on a sterile media, the process may require a waiting period of one or more weeks. Other techniques may involve months of waiting. All techniques that begin with an attempt to isolate a pathogen are tedious and time consuming to perform. During this interim, however, a turf pathologist is likely to suggest cultural and chemical approaches to alleviate the disease stress and further turf damage.



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