Sampling for Plant Parasitic Nematodes in Turf

J.O. Becker
Department of Nematology, University of California, Riverside, CA 92521
obecker@ucr.edu

Nematode-caused disease symptoms often resemble other problems such as fungal root diseases, insect damage, soil compaction, nutritional deficiencies or watering issues. Any turf sample will contain hundreds or thousands of nematodes, but most of them do not feed on plants. Identification of plant parasitic nematodes requires the use of a microscope. Nematodes that feed on plants differ in their ability to cause damage and correct diagnosis is essential in order to take appropriate countermeasures. Timely diagnosis of nematode-caused symptoms helps to avoid wasteful fertilizer or pesticide applications. In order to determine if plant-parasitic nematodes are causing a turf problem, samples need to be analyzed by an experienced nematode diagnostician. The quality of the sampling and the condition of the sample at the time it is processed determines the accuracy of the results.

A soil sampling tube, approximately 1 1/2 inch in diameter and 6 inches long, is the most appropriate tool. Nematodes do not occur uniformly distributed in soil; one individual sample might miss them completely or hitting a "nest" might vastly overestimate their occurrence. Randomly taking 15-20 soil cores from the root zone, combining and mixing them carefully in a bucket and taking about a quart as a sub-sample improves the precision of the analysis. It is essential that some roots are included.

Nematode-caused problems in turf often appear as circular damage with the grass in the center most affected. By the time the damage becomes apparent, the nematode population might already be reduced in the center because of lack of healthy roots. Consequently, it is preferred to take the samples from the outer region of the damaged area were roots still support a high nematode population. It is very helpful for the interpretation of the results if another sample is included from an area that appears to be unaffected.

Extraction methods differ among labs and some require the nematodes to be alive and actively moving. Use a sturdy plastic bag, seal it to prevent drying, and attach a label to identify the individual sample. Keep samples cool (50-58°F), pack them in a sturdy box and use next-day shipping.

To help the interpretation of the data, provide the lab with as much background information as possible on a separate sheet of paper (i.e. name, address, sample location, soil type, grass species, notable symptoms (yellowing/browning, root rotting or stunting, swellings or galls on root tips or distributed on all roots, last nematicide treatment with product name and application rate).