

CUTT

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Getting The Most Out Of A Soil Testing Program

Soil testing is one of the most basic turfgrass management tools. It is the only means of learning the nutrient status of your soil. It can be most helpful as you develop your fertilizer program for the coming year.

A soil test is of little value unless the sample sent to the lab is representative of the area. Since the sample usually represents a large area, you should carefully follow sampling instructions. ■

Soil Sampling

Fertilizer applied to an established turf tends to accumulate in the surface inch or two of soil. The nutrients are not evenly distributed through the rootzone. It is therefore important that you always sample to the same depth. Failure to do so can cause inconsistent results. Mark your sampling tube with a piece of tape to make sure samples are taken from the same depth.

Keep careful records of how and where you obtained your samples. If you stick to a regular sampling plan, you will be able to accurately document changes in fertility through time.

The Soil Test

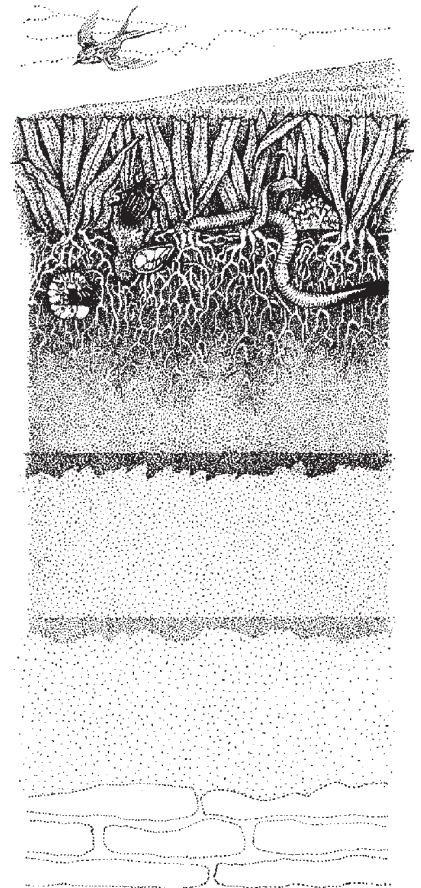
A soil test is a chemical method of estimating the nutrient supplying power of the soil. The means of coming up with this "estimate" may vary from lab to lab because there are several ways to extract nutrients from soils. This explains why results from different labs do not always agree. Some methods only remove those nutrients that

are in the soil solution. Other methods try to predict availability of reserve nutrients by extracting those on cation exchange sites.

More important than the soil test method used, is how the results are interpreted. The following questions must be addressed by the lab making recommendations: What do the measured levels mean? Will additions of nutrients at this soil test level produce a desirable response? If so, how much of the nutrient should be added until a benefit is no longer obtained?

These are not easy questions to answer. Soil test results must be calibrated against a plant response to applications of the nutrient in question.

Soil test calibration studies conducted at Penn State have helped refine recommendations for the methods we use. Much more work is needed, however, to improve our ability to interpret results for the methods used on different soil



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• **Carefully follow soil sampling instructions. Keep good records.**

• **Select a soil lab that suits your soil type.**

• **Choose a lab and stick with it to insure consistent results.**

• **Test at time of establishment and then every three to four years.**

• **If you have any questions on the test results or interpretations, ask.**

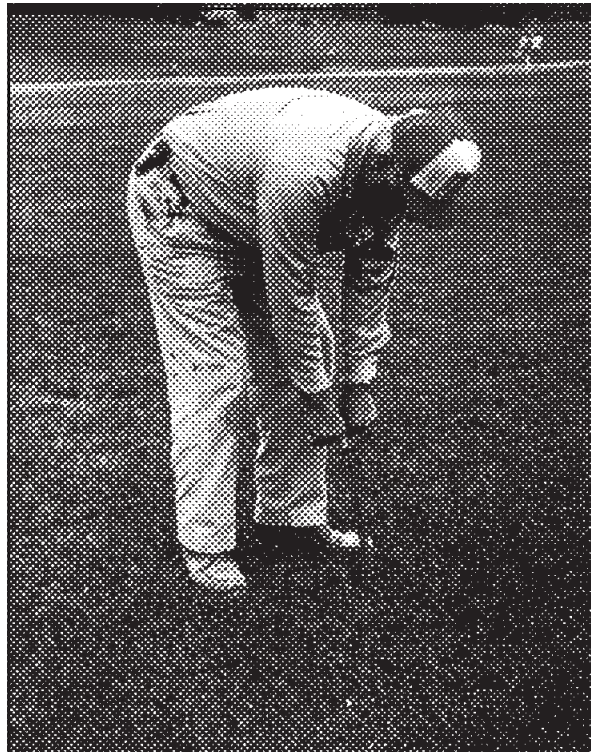
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Soil Testing

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types around the state.

Select a lab service that uses soil test calibration data for the interpretation of their results. Labs associated with the land grant universities usually have this information base as well as a knowledge of the soils in your state. Many



Soil Sampling: 3 to 4 inch depth; remove thatch; take representative sample; collect 1 pint per sample; label bag; keep record.

commercial labs are basing their recommendations on calibration work from universities as well. Ask your lab representative how they arrive at their recommendations. If they don't know, find another lab.

One of the most questionable practices being made by laboratories today is interpreting results for micronutrients. This is a perfect example of how our ability to analyze for a nutrient has exceeded our ability to interpret the results. Many factors besides soil levels will influence micronutrient availability. Organic matter, soil temperature, even grass species and cultivar will influence availability. Due to the complex nature of micronutrients, there has been little soil test calibration work done on turfgrasses. Therefore,

if someone recommends that you apply micronutrients to turf because of low soil test levels, question their recommendation.

In summary, the following steps should help you get the most out of your soil testing program:

- Carefully follow soil sampling instructions. Keep records of how and where samples were taken.
- Look at several labs and find out if their testing procedures are the most appropriate methods for your soil types.
- Once you have found a lab, stick with them. Labs are not likely to change methods. Using different labs could mean different results.
- Soil test at the time of establishment and every three to four years thereafter. Allow at least a month turn around time for results.
- If you have any questions on the test results or interpretation, don't be afraid to ask. You will be able to obtain more information from the test report as your understanding of the process improves.

NORMAN W. HUMMEL, JR.

Scanning the Journals

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it did not exceed EPA maximum levels for drinking or agricultural water use. The study is being continued to evaluate long-term effects. (From: A.R. Hayes, C.F. Mancino, and I.L. Pepper. 1990. *Irrigation of Turfgrass with Secondary Sewage Effluent: I. Soil and Leachate Water Quality*. *Agronomy Journal* 82(5): 939-943.)