

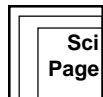
## SOIL TESTING Teaching Tips



### LEARNING OBJECTIVES

Youth will be able to:

- \* Explain why soil should be tested.
- \* List the types of soil tests and describe what each test can tell you.
- \* Take a representative soil sample for testing garden soil.



### HOW TO USE THE SOIL TESTING SCIENCE PAGE

To introduce this topic, point out examples of plants that are not growing well because of poor soil. These could be plants in a community garden, or even potted plants. (A good example is a houseplant that has been potted in garden soil. The soil may get compacted when it is put in a pot and watered.) Ask: What do you think is wrong with this plant? Why is it not growing well? Allow time for discussion. Then explain that a common mistake among new gardeners is to underestimate the importance of the soil. This may be because we can only see the above ground parts of plants. In fact, the below ground parts of a plant—the roots—are just as important to plant health as the stems and leaves. Ask: Why is soil so important to plants? (Answer: Plants get water, nutrients, and air from soil. Their roots are anchored in soil.) Ask: How can you find out if your soil is good enough for growing plants? (Answer: An experienced gardener can tell a lot about the soil by examining the color, feeling the texture, and even observing the weeds or other plants growing in it. Less experienced gardeners may wish to test their soil for its suitability for growing plants. Some important things that all gardeners need to know, such as heavy metal levels in their soil, can only be determined by testing.)

Explain to youth that this

Science Page will give them an overview of soil testing. After studying the page, they should be able to answer three questions: Why is soil tested? What types of soil tests are available? and How can you get soil tested? You may wish to divide youth into groups, and assign one of these questions to each group for discussion. Then a spokesperson for each group could report the answer back to everyone. Each group could also discuss what the quote from Xenophon means in the context of their discussion topic.

Here are some tips to help youth decide if certain soil tests are necessary:

- \* Assessing pH levels in soil is the test most often performed because soil pH is a common problem for growing plants. There is more information on this soil test in the Soil pH Science Page.
- \* The Soil Texture Science Page has information on how to measure the relative amounts of clay, silt, and sand.
- \* Soil drainage can be tested with a soil perc test. The Soil Water Science Page has more information about this test.
- \* You can get a general idea about how much organic matter is in your soil by looking at its color and texture. Soils that have a lot of organic matter are dark in color and are friable—they crumble instead of being molded when force is applied. A soil test will tell you exactly how much organic matter there is in the soil, and how much more you may need to add to make the soil ideal for growing vegetables and flowers.
- \* It is possible to purchase a soil kit to test the levels of soil nutrients in soil yourself. However, the results will not be as accurate as the results you can obtain from a testing lab.
- \* The salinity test may be important in hot, dry areas,

where salt precipitates on soil surfaces as water from the ground evaporates. In other areas, salt is not usually a problem, because it is very quickly washed out of soil by artificial watering or rains.

- \* An important test for urban gardeners is the one for heavy metals, especially lead.
- \* If a community garden is on land with a dubious history (for example, if the site used to be a gas station or factory), then it may be wise to have the soil tested for additional contaminants. Tests for gasoline and other contaminants are expensive, but important to have done if soil contamination is suspected. Gardeners can bring in new soil if their soil is highly contaminated.

Explain that there are some things soil tests do not tell you. For example, they do not tell you about the presence of insects or disease organisms. Another thing not ordinarily revealed is the presence of herbicides or weed killers. The overuse of these chemicals may result in the sudden death of plants.

Before youth collect their soil samples, emphasize that the results of a soil test are only as good as the sample. It is very important to collect a representative soil sample, so they should follow the directions carefully. Once the samples are collected, save them for pH testing (see Soil pH Science Page) or send them to a lab for testing. A local Cooperative Extension agent or gardening organization should be able to tell you where you can get a soil kit. Check your local telephone directory or the Internet for these or other local resources. It may also be useful to invite a soil science student from a local college to come and demonstrate some soil testing procedures, such as a pH test.



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