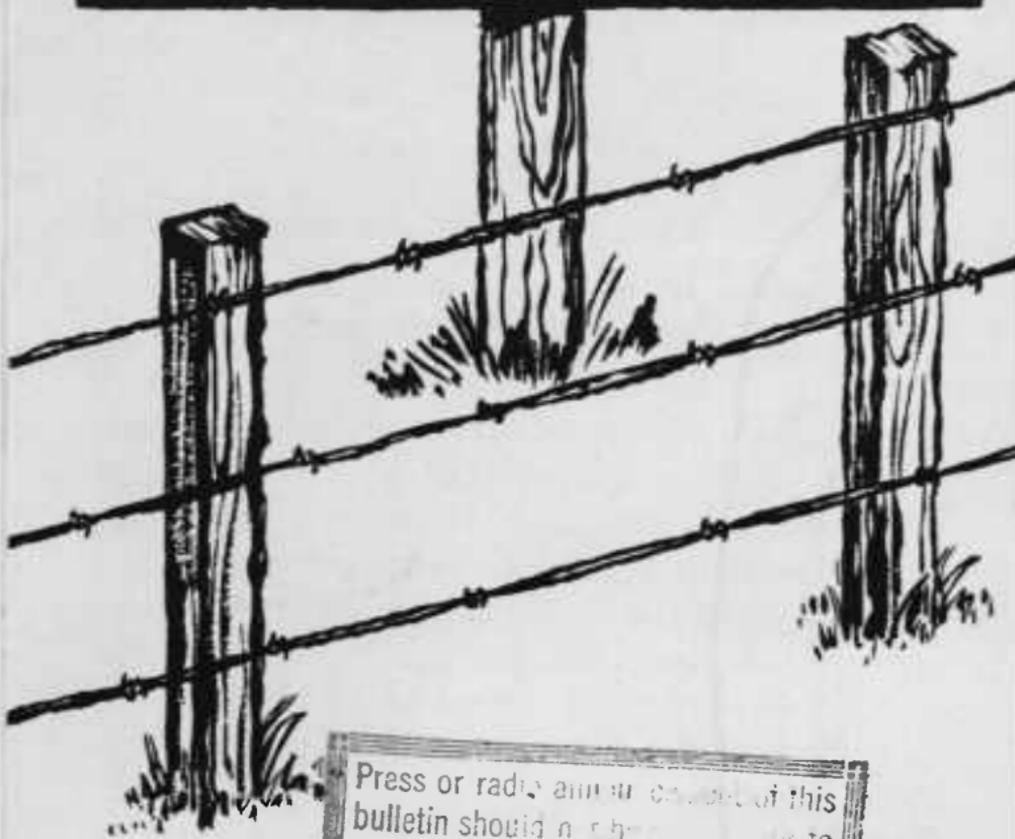


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**SOIL**

**TESTING TELLS**

*Test first  
then fertilize*



Press or radio answer card of this  
bulletin should be returned to

JUL 11 1962

Extension Circular 705

July 1962

Cooperative Extension Service  
Oregon State University, Corvallis

# Soil Testing Tells



Potassium, calcium, and magnesium are determined with a flame photometer.

The OSU soil testing service includes more than a chemical analysis of a soil. It begins when the soil sample is taken and submitted to the Laboratory. Here, tests are completed that show levels of important mineral nutrients. These levels are listed for each sample on the Soil Test Report which is sent to the local County Extension agent. Based on soil test levels and other important local information, Extension agents prepare soil fertility recommendations including recommended rates of application for different fertilizers, lime, or other materials.

The systematic use of soil tests helps **make money** by guiding the use of fertilizer for profitable yields. It can **save money** by showing when materials are not needed.

*This circular was prepared by A. S. King, Extension Soils Specialist, and L. A. Alban, Associate Soils Scientist, Oregon State University.*

# What a Soil Test Report Tells You

## pH or soil reaction

Soil reaction indicates the extent to which the soil is acid or alkaline. This is an important guide for the application of lime or for measures to correct salt-affected soils.

## Potassium

A potassium test guides the use of potash fertilizer. Potassium is removed from the soil in large quantities by crops, and the level in some soils can be critically reduced in one or two years. On the other hand, there may be no need for potash if the natural supply is ample or if it has been built up by past applications.

## Phosphorus

This test indicates the need and rate of application for phosphate fertilizers. Soils in some fields are low in phosphorus while others in the same area or on the same farm may have an ample supply. Tests often indicate fields where past phosphate use has built up generous levels so that annual applications can be cut down or eliminated.

## Magnesium

This is another necessary nutrient and when levels are low should be included in the fertilizer program for some crops. If the level of magnesium approaches or exceeds the calcium, crops may suffer from magnesium toxicity.

## Calcium

A low level of this major plant nutrient often means an acid soil and a need for lime which contains calcium. The ratio of calcium to magnesium is important. Excess calcium in relation to magnesium can aggravate the need for potash and magnesium.

## Total bases

"Total bases" is the sum of the chemically equal units of the basic nutrients potassium, calcium, and magnesium which have the same chemical effect on soil reaction. This is important in determining the need for lime.

## Total salts and sodium effect (alkaline soils only)

These tests indicate whether the concentration of salts or sodium would be harmful to crops. If the "sodium effect" is in the harmful range, the Laboratory automatically adds a test to show the "gypsum requirement" indicating the need for reclamation which should be based on further tests.

## Boron (optional)

A high percentage of western Oregon soils are critically low in boron and deficiencies occur elsewhere. The boron test should be included in the first test for every field. Since necessary applications for some crops may leave a toxic level for others, it is also important to test following heavy boron applications.

## Organic matter (optional)

This soil test can be included. It is especially important with intensive farming where maintenance of organic matter requires special cropping practices. Periodic tests, every 5 or 10 years, are usually adequate.

## Nitrogen and sulfur

These are not included in the soil test because available levels in the soil fluctuate widely from day to day depending on temperature, bacterial activity, crop removal, and leaching. Recommendations for nitrogen and sulfur based on experimental results and field experience are included in soil fertility recommendations.

Soil testing is done by the  
**Soil Testing Laboratory**

Oregon State University  
Corvallis, Oregon

## Soil fertility recommendations

These recommendations are prepared by local County Extension agents for each soil test. The agents suggest materials and rates of application based on values in each soil test report. In completing this important phase of the service, they further use information on soil type, past management practices, results of experimental work and field demonstrations, and results reported by local farmers. Your County Extension agent sends you his recommendations along with the Soil Test Report for each field. Keep them as a guide for future fertilizer use.

## F. R. sheets

Over thirty detailed Fertilizer Recommendation sheets have been prepared for crops grown in different areas. These recommendations include suggested rates, methods, and time of application of needed materials based on soil test values. They are available at County Extension offices.

## Taking soil samples

Samples can be taken any time during the year. Remember, it takes time for the Laboratory to complete the analyses and for County agents to prepare recommendations. Allow ample time for purchase and application of needed materials in advance of seeding. Play safe; sample in fall for spring use and in spring or early summer for fall use.

A soil test can be used to plan a fertilizer program for one or two years and a liming program for five to seven years. However, yearly testing can pay big dividends. It will help balance added fertilizer with nutrients required for crop production. If levels build up, applications can be reduced. If they drop off, rates should be increased.

## What do soil tests cost?

The Soil Testing Laboratory is self-supporting. A standard soil test costs \$2.50. For western Oregon this includes pH, phosphorus, potassium, calcium, magnesium, and total bases. For eastern Oregon a standard test includes pH, phosphorus, potassium, total salts, sodium effect, and gypsum requirement. An additional \$1.00 charge is made for a boron test and a test for organic matter also costs an additional \$1.00.

The full cost is no more than a bag of fertilizer. Usually each test can save the cost of several bags and add additional profits from increased yields.



The final stage of the phosphorus test—the determination of levels in a colorimeter.

**Y**our County Extension Office has sample boxes, information sheets, and directions for taking soil samples. Mail your samples to OSU, Soil Testing Laboratory, Corvallis, Oregon, or deliver them to Room 113, Agriculture Hall, OSU.

Cooperative Extension work in Agriculture and Home Economics, F. E. Price, director. Oregon State University and the United States Department of Agriculture cooperating. Printed and distributed in furtherance of Acts of Congress of May 8 and June 30, 1914