



# HOME & GARDEN

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Home & Garden Mimeo # HG 110

## Selecting and Using a Soil Testing Laboratory

Reducing the flow of nutrients into Maryland waterways is a principal mission of Maryland Cooperative Extension. The Home and Garden Information Center and Maryland Master Gardeners work hard to teach residents about how to fertilize plants responsibly, improve and conserve garden soil, and recycle nutrients through composting and grasscycling. Soil testing gives gardeners important information they need to make good decisions regarding soils and fertilizers.

The University of Maryland closed its soil testing lab on July 1, 2003. The **Regional Soil Test Labs Chart** will help you compare public and private soil testing laboratories. The University of Maryland does not endorse particular businesses and the inclusion or exclusion of specific labs does not reflect a bias. All of the listed labs can competently test soils and provide an understandable report that will include liming and fertilizing recommendations.

### Key Points Regarding Soil Testing

Send a minimum of 1 cup and a maximum of 2 cups of soil per sample. If no kit is provided, seal the soil in a zip lock bag.

Don't send wet soil. You should not be able to squeeze water from the sample.

Be sure to add enough postage when mailing the sample.

Be sure that all of your contact information is on the form and is mailed back to the lab with the sample and check for the correct amount.

Penn State University and University of Delaware soil testing labs will accept leftover Maryland kits and forms.

Soil test reports from all of the labs will provide a graphical representation of results- the level of various nutrients from your soil (low medium, high, excessive). "Optimal" and "excessive" levels mean that the nutrient concentration in the soil is more than adequate for optimum plant growth. Adding more of that nutrient will not improve plant growth and may have undesirable effects.

Be aware that the specific turfgrass fertilizer recommendations will not be identical to Maryland's. Go to the "Publications" section of our website and click on "lawns" to download factsheets that contain specific Maryland recommendations.

All labs provide good information on how to take and mail soil samples and how to interpret results. **Please call the Home and Garden Information Center at 1-800-342-2507 or e-mail us at [www.hgic.umd.edu](http://www.hgic.umd.edu), if you have any questions about the chart below or about the results and recommendations you receive from any of the labs.**

### Regional Soil Test Labs Chart

### Fertilizing Responsibly for a Healthy Chesapeake Bay

Nitrogen and phosphorous are the two key nutrient pollutants of waterways in Maryland that contribute to the complex problem known as eutrophication. These nutrients encourage blooms of algae that cloud the water and block sunlight causing underwater grasses to die. This has negative affects on aquatic life and birds. Huge numbers of microorganisms in the water then use up oxygen as they feed on and break down the dead algae. Dissolved oxygen in the water quickly declines, depriving fish, crabs and other aquatic life forms of needed oxygen.

It is estimated that up to 80% of the nitrogen entering groundwater and surface water comes from non-point sources- farms, public lands, private landscapes. About one-half of excessive or mis-applied nitrogen fertilizer enters surface fairly quickly as run-off from hard surfaces, lawns and gardens. The other half travels for at least 10 years through soil and underground water before it eventually enters the Chesapeake Bay (for Marylanders who live east of the Eastern Continental Divide, located in Garrett County). So mistakes in measuring and applying fertilizers today can contribute to nutrient pollution problems many years in the future.

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Farmers, municipalities, AND homeowners all have a duty to reduce the flow of nitrogen and phosphorous into streams, rivers, and the Chesapeake Bay. Fact Sheet 702, "Lawns and the Chesapeake Bay" has more detailed information on grasscycling, slow release nitrogen fertilizers, and fertilizing responsibly. Marylanders with lawns should be careful to drastically reduce or eliminate phosphorous fertilization if their soil test results show phosphorous (phosphate) levels that are "adequate", "optimum", or "excessive". The following companies offer lawn fertilizers that contain no phosphorous or a low percentage (3%-5%) of phosphorous: Lebanon-Seaboard (Greenview), Espoma LESCO, Scotts.

## Abbreviations and Terms Found in Soil Test Reports

The labs listed in the chart provide definitions and explanations of soil sampling terms and concepts. The list below will help you better understand soil tests and soil test reports.

**pH**- soil pH is a measure of a soil's hydrogen ion concentration. The greater the number of hydrogen ions the more acidic the soil. Soil pH is a critical measurement for gardeners because it affects the availability of nutrients for uptake by plant roots.

**Macronutrients**: these are required in the greatest quantity by plants. Sulfur is rarely tested because soils in Maryland are rarely deficient. Nitrate-nitrogen is not usually tested because it is constantly changing

**P**- phosphorous  
**K**- potassium  
**Mg**- magnesium  
**Ca**- calcium

**Micronutrients**: deficiencies are rarely a problem in Maryland soils, especially in the Central and Western regions. Eastern Shore gardeners may want to be sure that boron is included in the test they select.

**Fe**- iron  
**Zn**- zinc  
**Cu**- copper  
**Mn**- manganese  
**B**- boron

**Heavy metals**: are a concern, especially in soils where food crops are grown and children play. These elements can be a health hazard when 1) tracked into the house via shoes and tools, 2) ingested by young children, or 3) ingested from food crops grown in contaminated soil. For more information on lead, refer to Maryland Cooperative Extension fact sheet #HGIC 18, "Lead in Garden Soil".

**Pb**- lead  
**Ni**- nickel  
**Cd**- cadmium  
**Cr**- chromium

**OM**- organic matter. Soil organic matter drives the soils biological and chemical processes. Adding organic matter on a regular basis improves soil structure and builds a reservoir of nutrients for plant growth.

OM test results are given on a weight basis. Usually a sample is weighed in the lab and then ignited to burn off the carbon compounds. The sample is re-weighed to determine the OM%. Gardeners who add lots of organic matter to the top 8 inches of their soils may be surprised that the OM content is less than 5%. OM is lighter than mineral soil.

**CEC**- cation exchange capacity measures the capacity of a soil to hold and release nutrient ions. Soils high in clay and organic matter will have high CEC. This measurement will vary across Maryland soils. Adding organic matter is recommended where the CEC is less than 10.

**Disclaimer**: Mention of specific products, brands, or companies is not intended as an endorsement by the University of Maryland.

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