How to Read a Soil Test Report: Step by Step

1. Check the "crop" being grown under client's name. If more than one crop is being grown, there will be separate reports for each crop type.
2. Check the soil pH on the bar graph.
3. Compare pH on bar graph to "Recommended pH"
4. If pH is too high or too low, see if any limestone (to raise pH) or sulfur (to lower pH) is recommended. Sulfur is recommended to lower pH on certain acid loving crops such as blueberries, Irish potatoes, azaleas, rhododendrons, gardenias, blue hydrangeas, and camellias.
    a. Most people will want to use a pelletized form of dolomitic or calcitic limestone, which is readily found at most garden centers and easier to spread and apply. If soil test Magnesium levels are low, dolomitic limestone is preferred.
    b. Hydrated or burned lime (powder forms) can be used if a more rapid change in pH is needed for the current crop season. However, these lime types don't last as long.
    c. Sulfur is often found in the "organic" fertilizer section at local garden centers.
    d. If there is a major problem with the soil pH, it is recommended that the clients do a follow up soil test to check the pH in one year after lime/sulfur applications.
5. See what fertilizers are recommended in the text below "Recommendations". The fertilizer rates listed are based on the soil test results in the bar graph to make it easy. In other words, you don't need to worry about the bar graph!
    a. For vegetable gardens, seasonal fertilizer rates are given for heavy, medium, and light feeders, depending on the crop grown. For example, light feeders such as peas would be half the recommended fertilizer rate since too much nitrogen on peas would make all leaves and no flowers. Apply half of the recommended fertilizer at planting and the remainder when the crop is half-grown.
    b. For lawns, fertilizer rates are given "for establishment" of new lawns and "for maintenance" of older lawns. The "establishment" recommendations should be used for the first year after planting new seed or sod. After the first year, the "maintenance" recommendations can be used for 2 or 3 years before needing to do another soil test.
    c. For flowers, shrubs, and trees, the fertilizer rates are usually re-applied at regular intervals throughout the growing season. Recommendations can be used for 2 or 3 years before needing to do another soil test.
6. If phosphorus and other nutrients on the bar graph are unusually high, it could be the result of over-application of fertilizer, compost, or soil amendments such as chicken litter or ashes.
    a. High potassium is often the result of clients applying too much wood ash in their gardens or burning brush in the garden. Wood ash can also elevate the soil pH to unusually high levels.
    b. There isn't anything that can be done to "remove" nutrients from the soil once they are already there. Over time, plants will gradually absorb these nutrients and the levels will come down as long as more nutrients are not added.
    c. High phosphorus usually isn't a problem for most plants, with the exception of blueberries. Remind the client that over-application of any fertilizer or nutrient that is beyond crop recommendations can lead to water pollution problems in nearby streams, creeks, ponds, and wells. Only apply fertilizer nutrients, as needed, based on a soil test report.

Nutrient	Part of plant affected by nutrient deficiency	Symptoms	External circumstances leading to the nutrient deficiency	*Notes*
Nitrogen	**Older foliage, going to whole plant…….. Petioles (rare)……..**	**Pale green or yellow Red**	**Excessively leached or waterlogged soils, Soils with low organic matter**	***Most desert soils have insufficient nitrogen for normal plant growth***
Phosphorus	Older Leaves…… Whole plant…….. Petioles…….	Purpling, bronzing Stunting Red	Cold wet soils (early spring), acid or very alkaline soils, compacted soils	*Plant may be extremely dark green.*
Potassium	Older Leaves…… Leaf Margins……	Yellow translucent spots Browning	Soils with excessive leaching, high pH soils	*May be a problem if in excess*
Calcium	Roots……... Whole plants……..… New shoots…….. Stem or petiole…….. Fruit…….. Young or old leaves ……	Thickened Stunted Withered or dead Collapse Blossom End Rot Tip Burn	**Improper watering (most common cause),** very acid soils, soils with excessive potassium, excessively dry or wet soils	*Plant remains green Other crop problem includes: brownheart of escarole carrot cavity spot, celery blackheart,*
Iron	**Young leaves…….**	**Tissue between veins becomes pale or white**	**High pH soils, soils with low organic matter, high phosphorus, excess zinc, manganese or copper**	***Common desert problem*** *toxic at pH under 5.5*
Zinc	**Young leaves……... Petioles……**	**Pale or grayish, yellowing between veins; rosetted Weak**	**High pH, low organic matter, excess phosphorus in soil, lack of nitrogen**	***Common desert problem***
Manganese	**Young leaves…….**	**Yellow mottled areas**	**Soils with pH over 6.5, high iron soils, low nitrogen soils, dry weather compacted soils**	***Common desert problem*** *Similar to lack of iron toxic at pH under 5.5*
Magnesium	Interveinal space of older leaves; may begin around interior perimeter of leaf	Yellowing	Light acid soils, soils with excess potassium, calcium or phosphorus	*Plant green; leaves may look scorched*
Sulfur	Young leaves……. Leaf Veins…….. Whole plant……	Yellowing Paler than rest of leaf Stunted, pale	Sandy soils, soils with low organic matter	*Similar to virus infection symptoms or magnesium deficiency symptoms*
Boron	Growing points…… Young leaves……...	Die back Yellowing, distorted, form unnatural rosettes	Soil pH under 5.5 or over 6.8, sandy soils with low organic matter lack of nitrogen	*Plant dark green. May be toxic in excess.*
Copper	New shoots…….... Young leaves……. Whole Plant……..	Do not open Yellowing, become thin Pale green	High pH soils, lack of nitrogen compacted soils	
Molybdenum	Older leaves	Yellow, distorted, narrow	Soils with pH under 5.5	*Looks like lack of nitrogen*

THE UNIVERSITY OF GEORGIA
COOPERATIVE EXTENSION
Colleges of Agricultural and Environmental Sciences & Family and Consumer Sciences

Soil, Plant, and Water Laboratory
2400 College Station Road
Athens, Georgia 30602-9105
Web site: http://aesl.ces.uga.edu

Soil Test Report

(CEC/CEA Signature)

Sample ID

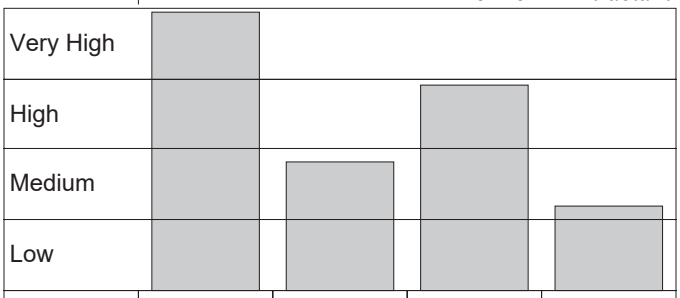
Client Information	*Lab Information*	*County Information*
Smith, John 770-387-5142 201 Address Street Cartersville, GA 30120 Sample: 1 Crop: Home Vegetable Garden	Lab #49988 Completed: Feb 27, 2012 Printed: Feb 28, 2012	**Bartow County** 320 W. Cherokee Avenue Rm. 112 Cartersville, GA 30120 phone: 770-387-5142 e-mail: uge1015@uga.edu

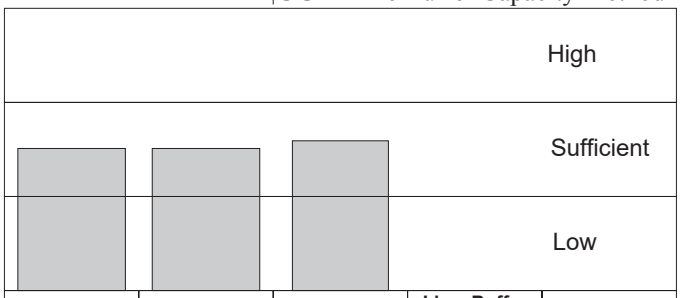
#1.

Results

Mehlich I Extractant | UGA Lime Buffer Capacity Method*

#6.





	Phosphorus (P)	Potassium (K)	Calcium (Ca)	Magnesium (Mg)	Zinc (Zn)	Manganese (Mn)	pH *	Lime Buffer Capacity (LBC)	
Soil Test Index	108 lbs/Acre	228 lbs/Acre	1740 lbs/Acre	144 lbs/Acre	12 lbs/Acre	23 lbs/Acre	6.3	435	Soil Test Index

#2.

Recommendations

#4. No Limestone recommended.

#3. Recommended pH: 6.0 to 6.5

*For information on how the Soil, Plant, and Water Laboratory measures and reports pH and makes lime recommendations, see http://aesl.ces.uga.edu/soil/SoilpH.html.

Apply 1/2 pound of sulfur (S) or two pounds of gypsum per 1000 square feet.

#5. Broadcast 20 pounds of 15-0-15 per 1000 square feet, or apply 7 pounds of 15-0-15 per 100 linear feet of row.

The recommendation given above is for medium feeders, which includes crops such as beans, beets, cantaloupes, cucumbers, eggplant, okra, onions, tomatoes, english peas, peppers, radish, squash, watermelon, and sweet potatoes.

For heavy feeders such as broccoli, cabbage, greens (kale, mustard, turnip, collards), lettuce, irish potatoes, and sweet corn, increase the recommendation by 50%.

#5a.

For light feeders such as southern peas, reduce the recommendation in half.

See Home Vegetable Garden Fact Sheet

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Soil Test Report

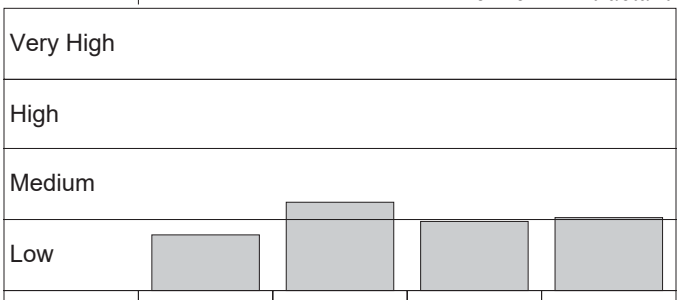
(CEC/CEA Signature)

Sample ID

Client Information	*Lab Information*	*County Information*
Smith, John fake_email@yahoomail.com 201 Address Street Canton, GA 30114 Sample: 1 #1. Crop: Zoysia Lawn	Lab #63296 Completed: May 29, 2007 Printed: Jan 4, 2012	**Cherokee County** 100 North Street, Suite G21 Canton, GA 30114 phone: 770-479-0421 e-mail: uge1057@uga.edu

Results

Mehlich I Extractant



#6.

	Phosphorus (P)	Potassium (K)	Calcium (Ca)	Magnesium (Mg)
Soil Test Index	16 lbs/Acre	124 lbs/Acre	396 lbs/Acre	62 lbs/Acre

UGA Lime Buffer Capacity Method*

Zinc (Zn)	Manganese (Mn)	pH *	Lime Buffer Capacity (LBC)	Soil Test Index
4 lbs/Acre	18 lbs/Acre	5.1	303	

#2.

Recommendations

#4. **Limestone**: 55 pounds per 1000 square feet

#3. Recommended pH: 6.0 to 7.0

*For information on how the Soil, Plant, and Water Laboratory measures and reports pH and makes lime recommendations, see http://aesl.ces.uga.edu/soil/SoilpH.html.

Clippings do not contribute to thatch under proper management and thus, do not need to be removed. If they are removed, increase the fertilizer application rate by 30%.

If the lime recommendation is greater than 25 pounds per 1000 square feet, split the application and apply only 25 pounds in any single application. Wait 4 months between applications.

CAUTION: Water lawn thoroughly immediately after applying fertilizer. Do not apply fertilizer when grass is wet.

#5. **For establishment**, incorporate 15 pounds of 10-10-10 per 1000 square feet into the top 4 to 6 inches of soil prior to seeding, sprigging, or sodding. Then apply 2 pounds of 34-0-0 or 1 1/3 pound of 46-0-0 per 1000 square feet monthly during the growing season through August. To improve winter hardiness, apply 6 pounds of 16-4-8 per 1000 square feet in September. Follow this fertilizer program for the first year only, then use the maintenance fertilizer program for the next 2 to 3 years. Retest 2 to 3 years after establishment.

#5b. **For maintenance**, apply 10 pounds of 10-10-10 per 1000 square feet when spring growth begins and in September. In mid-June and early August, apply 2 pounds of 34-0-0 or 1 1/3 pound of 46-0-0 per 1000 square feet.

The University of Georgia
College of Agricultural & Environmental Sciences
Cooperative Extension Service

Agricultural & Environmental Services Laboratories

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Fertilizer Calculator

N-P_2O_5-K_2O

R. Hitchcock and D. E. Kissel

The University of Georgia Fertilizer Calculator was developed to assist users whose fertilizer needs require adjustment from the standard soil test recommendation due to a change in units, availability of fertilizer products, and/or a difference in land size. With it, the user can calculate the weight of fertilizer materials to supply the amounts of N, P_2O_5, and K_2O recommended by a soil test report. Users have the option to select recommendations in pounds per acre that are typical of agronomic crop recommendations or in pounds per 1000 square feet that are typical of homeowners reports such as for a home lawn. The calculator also allows the user to select fertilizer grades different from those given in the recommendation. This is useful when the fertilizer grades in the test report are not available locally. The calculator ranks the various fertilizer combinations, with the best getting the highest score. The calculator also has a section that allows the user to calculate the area of a garden or lawn given the dimensions and shape of the area to be fertilized. Fertilizer costs can also be calculated.

Use this calculator to ...

Convert fertilizer recommendations between pounds per acre and pounds per square feet.

List alternative recommendations when fertilizer grades are not available.

Get recommendations based on the specific area to be fertilized.

Calculate fertilizer cost.

Step 1. Enter fertilizer requirements

Fertilizer recommendations are given in:

- ○ pounds per acre
- ◉ a specific grade (such as 10-10-10)

20 pounds of 15-0-15 per 1000 square feet

Example: 5 pounds of 10-10-10 per 1000 square feet

Step 2. Select available grades

Choose from the list of commonly-available grades, or add your own in N-P_2O_5-K_2O format.

Common	Available
☐ 46-0-0	Fertilizer grades (N-P_2O_5-K_2O) / Cost per pound ($)
☐ 0-46-0	
☑ 0-0-60	0-0-60
☐ 34-0-0	10-10-10
☐ 18-46-0	35-0-5
☑ 35-0-5	
☐ 20-7-5	
☐ 24-24-4	
☐ 32-10-4	
☐ 29-0-4	
☐ 22-2-2	
☐ 20-27-5	
☐ 12-12-12	
☐ 24-0-11	
☑ 10-10-10	
☐ 18-24-12	
☐ 13-13-13	

Step 3. Choose application rate and area

pounds per 1000 square feet

If the area is unknown, what shape best describes the area to be fertilized?

Rectangle | Triangle | Circle | Oval | Half Oval

Options

☑ **Show all scores**

Number of grades to use in recommendation: 2

Round recommendations to nearest:

◉ Tenth ○ Quarter ○ Half ○ Whole number

Step 4. Calculate

Fertilizer recommendations based on available grades, application rate, and area

Recommendation	Cost	Nutrients supplied per rate and area N	P_2O_5	K_2O	Nutrients surplus or deficit N	P_2O_5	K_2O	Score
4.3 pounds of **0-0-60** plus **8.6** pounds of **35-0-5** per 1000 square feet.	–	3.01	0.00	3.01	0.01	0.00	0.01	**100**
60.0 pounds of **35-0-5** per 1000 square feet.	–	21.00	0.00	3.00	18	0.00	0.00	**85**
30.0 pounds of **10-10-10** per 1000 square feet.	–	3.00	3.00	3.00	0.00	3	0.00	**60**
More nitrogen needed. **5.0** pounds of **0-0-60** per 1000 square feet.	–	0.00	0.00	3.00	3.00	0.00	0.00	**55**
More potassium needed. **8.6** pounds of **35-0-5** per 1000 square feet.	–	3.01	0.00	0.43	0.01	0.00	2.57	**50**

The Score
The score represents how well a fertilizer recommendation matches the soil test report recommendation.

A perfect score is 100.
Points are deducted if the supplied nitrogen is outside 10% of N recommended, if the supplied phosphorus is too high, or if the supplied potassium is too low.

You can view recommendations based on the best score or on all scores.

Number of grades to use in recommendation
The Fertilizer Calculator provides a recommendation based on the best combination (best score) of 1, 2, or 3 fertilizer grades.

To access calculator, go to this website: http://aesl.ces.uga.edu/soil/fertcalc/

For those who do not want to figure out the equivalent weights, here is an approximation of amounts of ingredients to use to attain the correct amounts of organic fertilizers called for in the soil test for 1,000 sq. ft. You should not rely on these approximations without doing soil testing to confirm nutrient needs.

Table 2. Organic fertilizer recommendations based on average nutrient contents for the various materials.

Recommendations for Inorganic Fertilizers	Nitrogen[1] Needed for 5 lbs of 5-10-15 from Organic Source	Phosphorus Needed for 5 lbs of 5-10-15 from Organic Source	Potassium Needed for 5 lbs of 5-10-15 from Organic Source
5 lbs 5-10-15 (using component fertilizers)	2.0 lbs blood meal 8.3 lbs alfalfa meal 4.2 lbs cotton seed meal 2.0 lbs feather meal 2.5 lbs fish meal 2.0 lbs hoof meal 8.0 lbs cricket manure 4.0 lbs soybean meal	4.5 lbs bone meal 1.4 lbs colloidal phosphate	3.1 lbs Sul-Po-Mag 15.0 lbs greensand 15.0 lbs granite dust 25.0 lbs kelp
	Nitrogen Needed for 5 lbs of 6-12-12	**Phosphorus Needed for 5 lbs of 6-12-12**	**Potassium Needed for 5 lbs of 6-12-12**
5 lbs 6-12-12 (using component fertilizers)	2.0 lbs blood meal 10.0 lbs alfalfa meal 5.0 lbs cotton seed meal 2.0 lbs feather meal 2.5 lbs fish meal 2.5 lbs hoof meal 10.0 lbs cricket manure 3.7 lbs soybean meal	5.5 lbs bone meal 3.0 lbs colloidal phosphate	2.7 lbs Sul-Po-Mag 12.0 lbs greensand 12.0 lbs. granite dust 20.0 lbs kelp
Nitrogen, Phosphorus and Potassium Needed for 5 lbs of 10-10-10			
5 lbs 10-10-10 (for even analysis fertilizers)	33.3 lbs of compost (1.5-1-1.5) 33.0 lbs of 30% poultry manure (3-2.5-1.5) 50.0 lbs of OMRI approved fertilizer 1-1-1		
	Nitrogen Needed for 5 lbs of 10-10-10	**Phosphorus Needed for 5 lbs of 10-10-10**	**Potassium Needed for 5 lbs of 10-10-10**
5 lbs 10-10-10 (using component fertilizers)	4.2 lbs blood meal 17.0 lbs alfalfa meal 8.3 lbs cotton seed meal 3.3 lbs feather meal 5.0 lbs fish meal 4.2 lbs hoof meal 16.7 lbs cricket manure 7.5 lbs soybean meal	4.5 lbs bone meal 2.8 lbs colloidal phosphate	2.3 lbs Sul-Po-Mag 10.0 lbs greensand 16.6 lbs kelp

[1]Use only one of these amounts of fertilizer materials to equal 5 lbs of nitrogen or use one-half of two different materials to make up the 5 lbs of nitrogen required. The same process can be used for any other nutrient in the chart.