Soil Sampling for Home Lawns & Gardens

revised April 2014

When to Sample

- A soil sample should be taken a few months before starting any new landscaping project.
- Submit samples from April through October to avoid the delays that are common at the laboratory during the busy winter season.

→ Jan	→ Feb	→ Mar	Best time to sample: Apr	May	Jun	Jul	Aug	Sep	Oct	Busy → Nov	Dec

Tools for Sampling

- Use appropriate sampling tools to collect samples, such as a soil probe, spade, hand garden trowel or shovel.

- Place collected soil in a clean plastic bucket.

Where to Sample

- Identify unique areas you will want to fertilize differently: for example, lawn, flower garden, vegetable garden, and/or trees/shrubs.
- Collect a separate sample from each of these areas if they will be managed differently.

Amount to Sample

- For each unique area, collect at least six to eight soil cores (subsamples) from random locations and combine them in a plastic bucket to make one composite sample.

Depth of Sample

- For lawns, collect soil cores four to six inches deep (excluding thatch and turf).
- Place all cores for one sample area into a plastic bucket and mix thoroughly.

Filling the Sample Box

- Get soil boxes from the NCDA&CS Agronomic Division or county Cooperative Extension office.
- Use the soil mixture in the plastic bucket to fill the sample box about two-thirds full. Look for the red “fill line” marked on the box.
- Close box flaps securely to prevent spilling soil and mixing it with other samples.

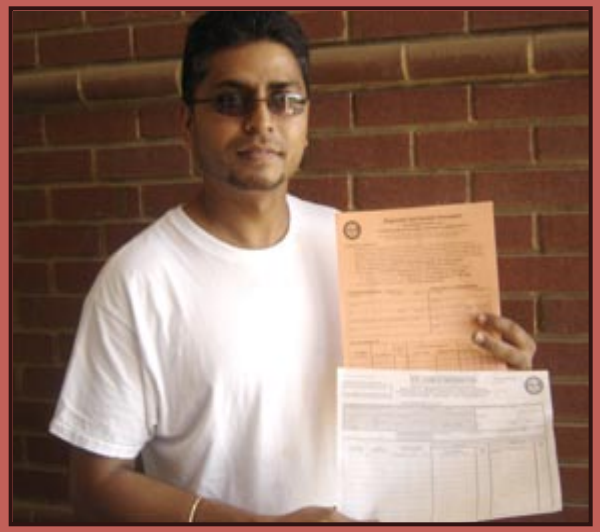
Labeling the Sample Box

- Use an appropriate sample ID that will help you remember the area it represents: for example, LAWN, ROSES, GARDN, SIDE, BACK.

- Write your name and address on each box.

Providing Sample Information

- Preferred Method: Enter sample information online in PALS, submit data electronically, and print copy of Soil Sample Information form to send to the lab with your samples . . . . . *or*
- Go to www.ncagr.gov/agronomi/forms.htm, select the appropriate form, print a copy, and fill it out by hand.



Submitting Electronic Soil Sample Information

- First, create a password-protected login account in PALS & wait for email confirmation of its establishment.
- Log into your account & choose Submit Sample Information from the “Utilities” drop-down menu.
- During peak season (late Nov → March), you will be prompted to pay with a credit card when you submit your sample information.
- For details, see the online tutorial.

Submitting Handwritten Sample Information

- Write legibly.
- Try to be consistent in how you list your name and address from year to year to prevent duplication of names in the Agronomic database.

Form AD-1 (May 2010)

SOIL SAMPLE INFORMATION

NCDA&CS Agronomic Division Soil Testing Section
Mailing Address: 1040 Mail Service Center, Raleigh NC 27699-1040
Physical Address (UPS/FedEx): 4300 Reedy Creek Road, Raleigh NC 27607
Phone: (919) 733-2655 Web Address: www.ncagr.gov/agronomi

FOR OFFICE USE ONLY
REPORT #
DATE REC'D
INITIAL

SAMPLE TYPE
Routine samples only — no fee

SAMPLE INFORMATION

FARM ID: Home
SAMPLE DATE: 3/9/2010
COUNTY (*where collected*): Wake
NUMBER OF SAMPLES: 4

Reminders

Fill sample box to red line.

Select the proper crop code(s) from the list on the back of this form.

Pack samples securely for shipment.

GROWER INFORMATION (*please print*)

LAST NAME: Gardener FIRST NAME: Suzie Q.
ADDRESS: 4300 Reedy Creek Rd.
CITY: Raleigh STATE: NC ZIP: 27607
PHONE: (910) 846-0000
E-MAIL ADDRESS: sggardner@home.net ☒ Do Not notify me when report is available.

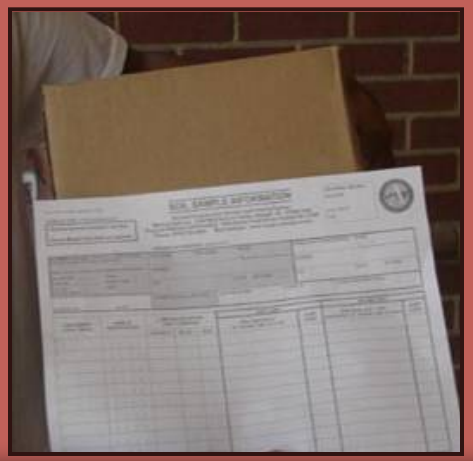
CONSULTANT/OTHER RECIPIENT

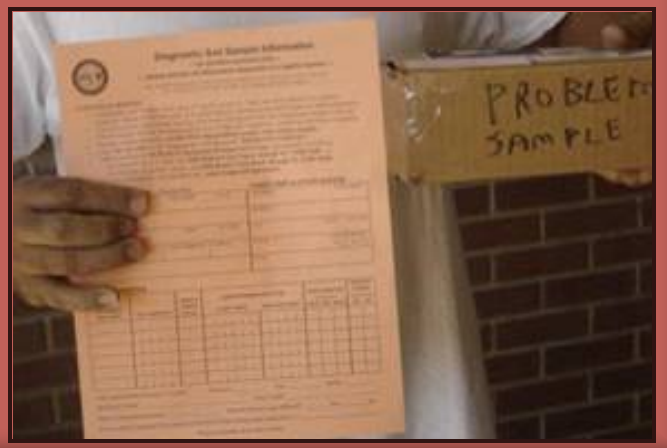
LAST NAME FIRST NAME
ADDRESS
CITY STATE ZIP
PHONE (___) ___-____
E-MAIL ADDRESS ☐ Do Not notify me when report is available.

LAB NUMBER (Leave blank)	SAMPLE IDENTIFICATION	LIME APPLIED WITHIN PAST 12 MONTHS Tons/Acre	Month	Year	You must specify a crop CODE to receive a recommendation (see reverse side of form) FIRST CROP	CODE	SECOND CROP	CODE
1	lawn				lawn	026	lawn	026
2	centipe				centipede	022	centipede	022
3	veg e				vegetable garden	024	vegetable garden	024
4	azal				azaleas	020	azaleas	020
5								

Packaging Sample Boxes

- Place sample boxes upright in a sturdy cardboard container for shipping. Fill empty spaces with crumpled newspaper to prevent shifting.
- Place completed Soil Sample Information form in the shipping box.
- If you are sending problem samples, write “Problem Sample” on outside of shipping box.





Shipping

- The preferred method of shipping your soil samples is via DHS, FedEx or UPS to the Agronomic Division's physical address:

  NCDA&CS Agronomic Division
  Soil Testing Section
  4300 Reedy Creek Road
  Raleigh, NC 27607-6465

- When sending samples via the U.S. Postal Service, use the Division's mailing address:

  NCDA&CS Agronomic Division
  Soil Testing Section
  1040 Mail Service Center
  Raleigh, NC 27699-1040

Soil Sample Drop Off

- If you choose to deliver your samples directly to the Agronomic Division, please place them in the yellow cart on the loading dock (located on the right side of the building).

Soil Sample Turn-around Time

- For most of the year, soil samples are usually analyzed within one week after arrival at the laboratory.

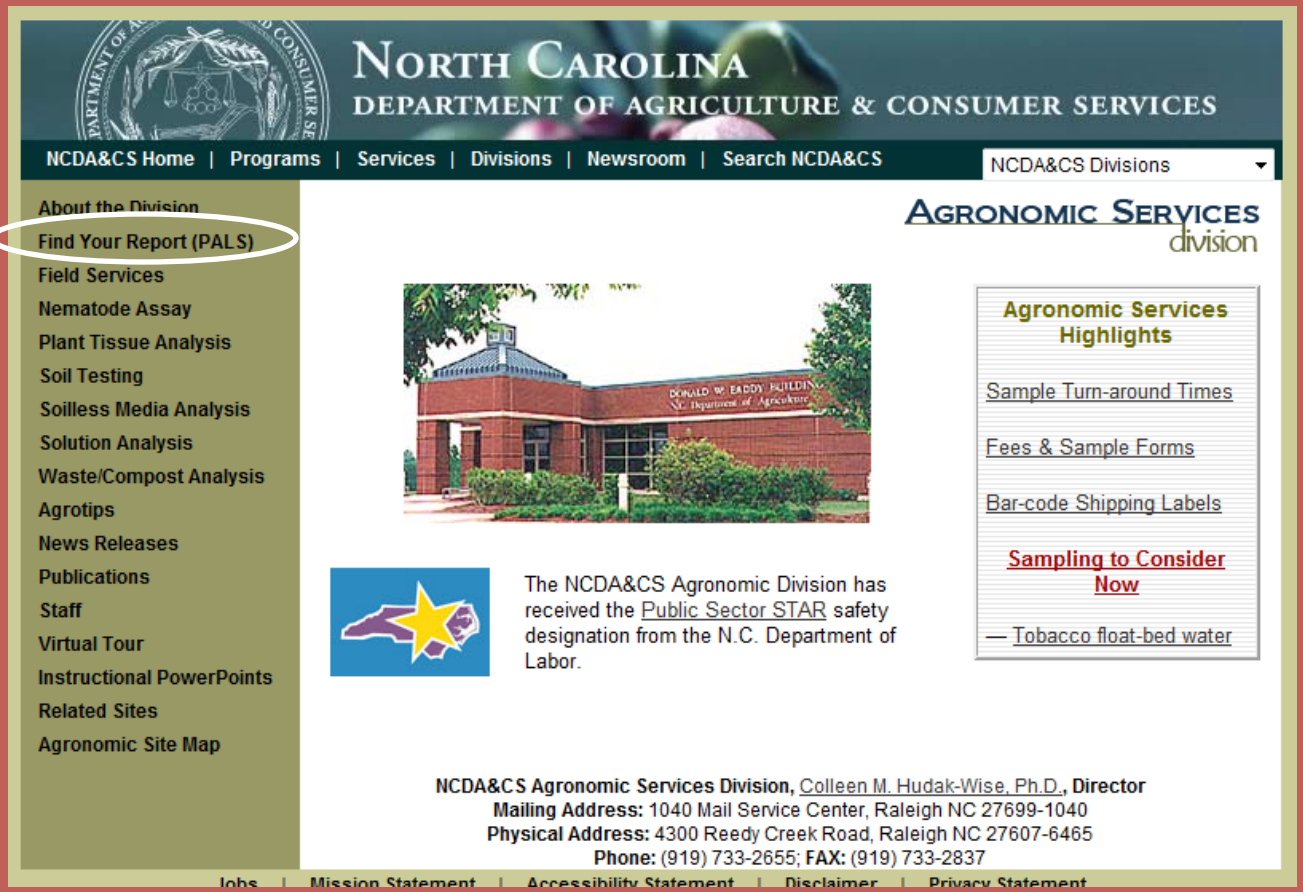
- During the busy winter season, thousands of samples arrive at once. Sample turn-around may take several weeks from October through February.

→	→	→	→										
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Busy	→

Best turn-around time

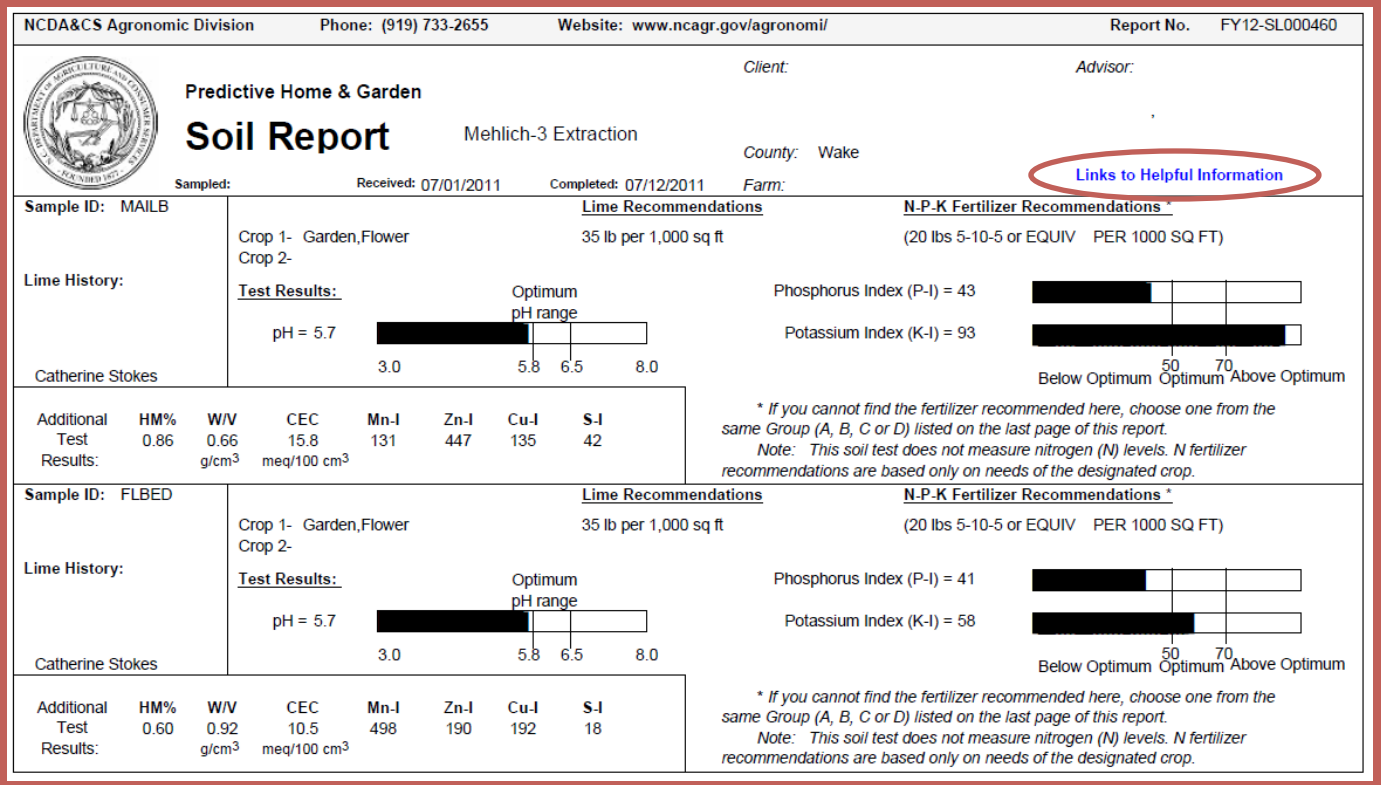
Soil Test Reports

- Visit the Agronomic Division's website www.ncagr.gov/agronomi/ to search, view & save your reports.



Explanatory Information

- Each online soil report contain hyperlinks to explanatory information regarding technical terms, nutrient index values and fertilization recommendations for specific crops.



NCDA&CS Agronomic Division Phone: (919) 733-2655 Website: www.ncagr.gov/agronomi/ Report No. FY12-SL000460

Predictive Home & Garden

Soil Report Mehlich-3 Extraction

Client: Advisor:

County: Wake

Sampled: Received: 07/01/2011 Completed: 07/12/2011 Farm:

Links to Helpful Information

Sample ID: MAILB

Lime History:

Catherine Stokes

Lime Recommendations

Crop 1- Garden,Flower 35 lb per 1,000 sq ft

Crop 2-

N-P-K Fertilizer Recommendations *

(20 lbs 5-10-5 or EQUIV PER 1000 SQ FT)

Test Results:

Optimum pH range

pH = 5.7

3.0 5.8 6.5 8.0

Phosphorus Index (P-I) = 43

Potassium Index (K-I) = 93

50 70

Below Optimum Optimum Above Optimum

Additional Test Results:	HM%	W/V g/cm³	CEC meq/100 cm³	Mn-I	Zn-I	Cu-I	S-I
	0.86	0.66	15.8	131	447	135	42

* If you cannot find the fertilizer recommended here, choose one from the same Group (A, B, C or D) listed on the last page of this report.
Note: This soil test does not measure nitrogen (N) levels. N fertilizer recommendations are based only on needs of the designated crop.

Sample ID: FLBED

Lime History:

Catherine Stokes

Lime Recommendations

Crop 1- Garden,Flower 35 lb per 1,000 sq ft

Crop 2-

N-P-K Fertilizer Recommendations *

(20 lbs 5-10-5 or EQUIV PER 1000 SQ FT)

Test Results:

Optimum pH range

pH = 5.7

3.0 5.8 6.5 8.0

Phosphorus Index (P-I) = 41

Potassium Index (K-I) = 58

50 70

Below Optimum Optimum Above Optimum

Additional Test Results:	HM%	W/V g/cm³	CEC meq/100 cm³	Mn-I	Zn-I	Cu-I	S-I
	0.60	0.92	10.5	498	190	192	18

* If you cannot find the fertilizer recommended here, choose one from the same Group (A, B, C or D) listed on the last page of this report.
Note: This soil test does not measure nitrogen (N) levels. N fertilizer recommendations are based only on needs of the designated crop.

Last Page of the Report—More Help

- Here you will find an explanation of technical terms, tips on selecting lime & fertilizer, and hyperlinks to other relevant information.

Understanding the Soil Report

Lime

Application of lime at the recommended rate will raise soil pH to the optimum range. Do not apply too much lime. When soil pH becomes too high, lowering it is very difficult. Often, the best solution then is to choose plants that can tolerate a high pH.

Choosing dolomitic lime can be advantageous because it contains the nutrients calcium and magnesium. Pelleted lime is easier to spread uniformly than powdered lime.

Lime can be applied at any time of year, but because it reacts slowly, it is best to apply it several months before a new planting. Mixing it into the soil will speed the reaction time. Lime applied to the soil surface takes much longer to correct soil pH.

A surface application should not exceed 60 lb per 1,000 sq ft. If a soil report recommends more than this, apply 60 lb per 1,000 sq ft initially and the rest in similar increments every 6-9 months until the full rate is applied.

Fertilizer

Soil tests do not measure nitrogen (N) since it is very unstable in soils; the N recommendations provided on the soil report are based on plant needs. If soil-test P-I and K-I values are adequate (>50), only nitrogen is recommended- Group D below. A mixed (N-P-K) fertilizer is recommended if P-I and
K-I values are less than optimum- Groups A - C below. Although a specific fertilizer grade may be recommended (e.g., 5-10-10), other equivalent options are likely to be available (e.g., any fertilizer in Group A from Table 1).

Tips on Fertilizer Application

- To determine how much fertilizer to buy, estimate (in feet) the length (L) and width (W) of the area to be treated: L × W = sq ft. Square off curves to make estimates easier. If the recommendation is 20 lb per 1,000 sq ft and your area is 5,000 sq ft, then you need 100 lb (20 × 5) for your 5,000-sq-ft area.
- Calibrate your spreader according to manufacturer settings. Apply half the total rate in one direction; apply the rest at a 90° angle. This cross-hair pattern provides a more uniform application.
- After application, sweep up any fertilizer on hard surfaces and apply to fertilized areas so rainfall does not carry fertilizer to a storm drain.

Table 1. Groups of equivalent fertilizers that supply 1 lb of N per 1,000 sq ft *

Group A: low P-I + low K-I	Group B: low P-I + high K-I	Group C: high P-I + low K-I	Group D: N only
5-10-10 @ 20 lb	5-10-5 @ 20 lb	8-0-24 @ 12 lb	15-0-0 @ 7 lb
3-9-9 @ 30 lb	18-46-0 @ 6 lb	15-0-14 @ 7 lb	21-0-0 @ 5 lb
10-10-10 @ 10 lb	18-24-10 @ 6 lb	6-6-18 @ 18 lb	16-0-0 @ 6 lb
11-15-11 @ 10 lb	9-13-7 @ 11 lb	5-5-15 @ 20 lb	28-0-4 @ 4 lb
8-10-8 @ 12 lb	9-17-8 @ 11 lb	10-0-14 @ 10 lb	12-6-6 @ 8 lb

* Since these rates supply 1 lb N per 1,000 sq ft, use half the rate if centipede is the grass type.

Report Abbreviations

CEC	cation exchange capacity
Cu-I	copper index
HM%	percent humic matter
Mn-I	manganese index
pH	soil pH
S-I	sulfur index
SS-I	soluble salt index
W/V	weight per volume
Zn-I	zinc index

Time Fertilizer Application to Coincide with Plant Growth Cycle:
Bermudagrass: May, July, Sept
Centipedegrass: May
St. Augustine grass: May, August
Tall fescue: Sept, Nov, Feb
Zoysia: May, July
Flowers/shrubs: prior to planting or during the growing season
Vegetables: prior to planting

Helpful Links

A Homeowner's Guide to Fertilizer

Note 4: Fertilization of Lawns, Gardens & Ornamentals

Caring for Your Lawn & Environment

Carolina Lawns

Soil Acidity and Liming: Basic Information for Farmers & Gardeners