

# Soil Testing for Lawns and Gardens

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**NC State Extension**



# Soil Testing in NC

- Service provided by **NC Department of Agriculture, [Agronomic Services Division](#)**
- Agronomic Lab located in Raleigh
- Boxes and forms for packaging samples available from any **county Extension center**
- Home soil testing kits very inaccurate



**NC State Extension**

# What Soil Testing Can Tell You

- **Nutrients** your soil needs to support healthy growth
  - Can be applied with natural (organic) or synthetic fertilizers
- If nutrient levels are **too high**
- **Soil pH**
  - Is your soil acidic (sour), or
  - Is it alkaline (sweet)
- **If lime is needed** & how much

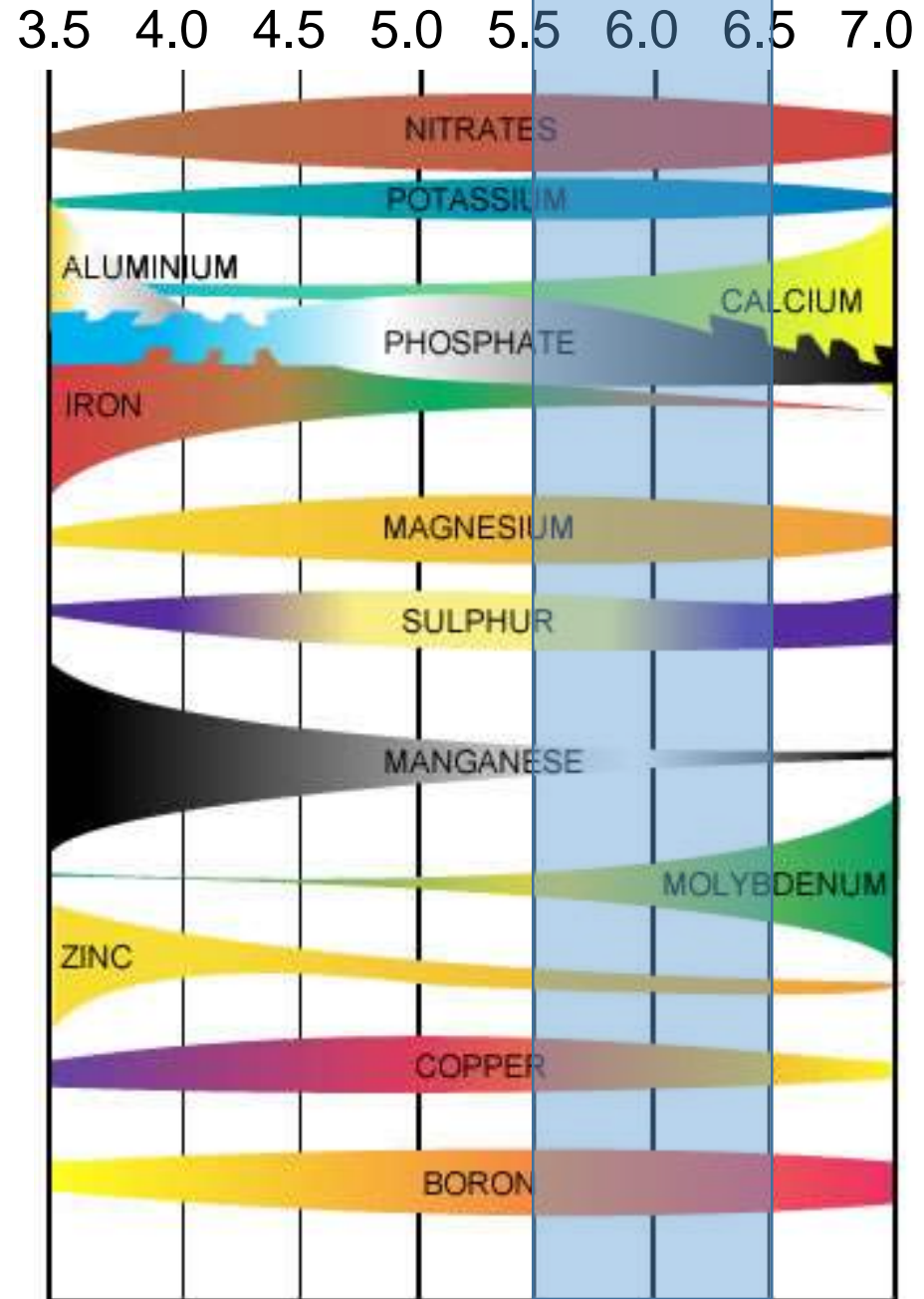


Iron deficiency,  
likely caused by  
high pH

# Soil pH

- Measure of how acidic or alkaline (basic) soil is
- **5.5 – 6.5** ideal for most plants (and microbes!)
- Piedmont soils typically acidic,  $> 5.0$
- Amended soils may be too high,  $> 7.0$

**5.5 – 6.5 ideal for most plants**

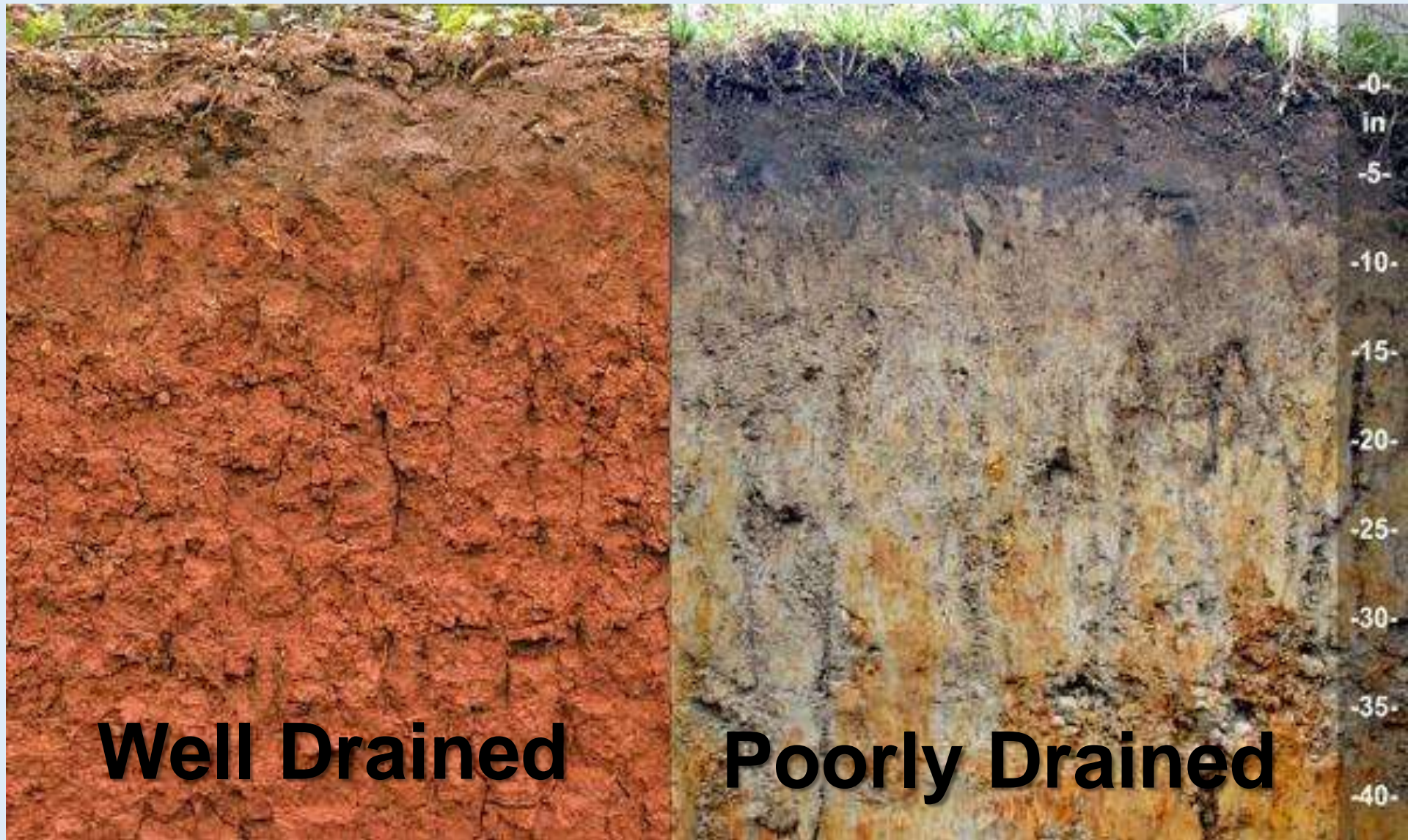


# What Soil Testing Can Not Tell You

- **Why your plant died**, unless nutrient or salt related
- If **diseases** are present in the soil
- If **pesticides or chemical residues** are in the soil
- Does not directly tell you **how to amend** your soil



Soil testing does not analyze drainage issues or soil compaction – both are common, serious problems



**Well Drained**

**Poorly Drained**

# When to Sample

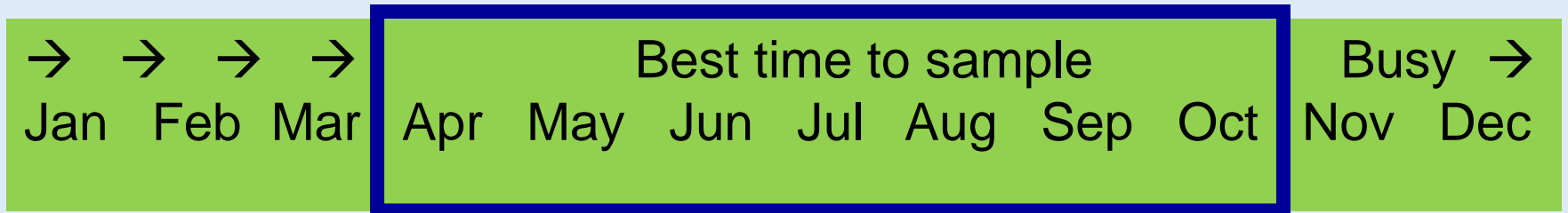
- Take samples **at least 2-3 months before starting any gardening project**
- It takes time to change soil pH
- Lime needs to be incorporated
- Some nutrients need to be incorporated

Lime increases  
soil pH



# When to Sample

- Submit samples **April through October** to avoid delays common during the busy winter season
- No charge for samples submitted April - Oct
- Peak season fee, \$4 per sample (box) for samples received Dec. 1 – March 31





# When to Sample

- **Clay soils:**  
every 3-4 years
- **Sandy soils:**  
every 2-3 years
- **If fertilizer or lime applied,**  
wait 6-8 weeks before  
collecting samples
- **Avoid sampling wet soils**



# Tools for Sampling

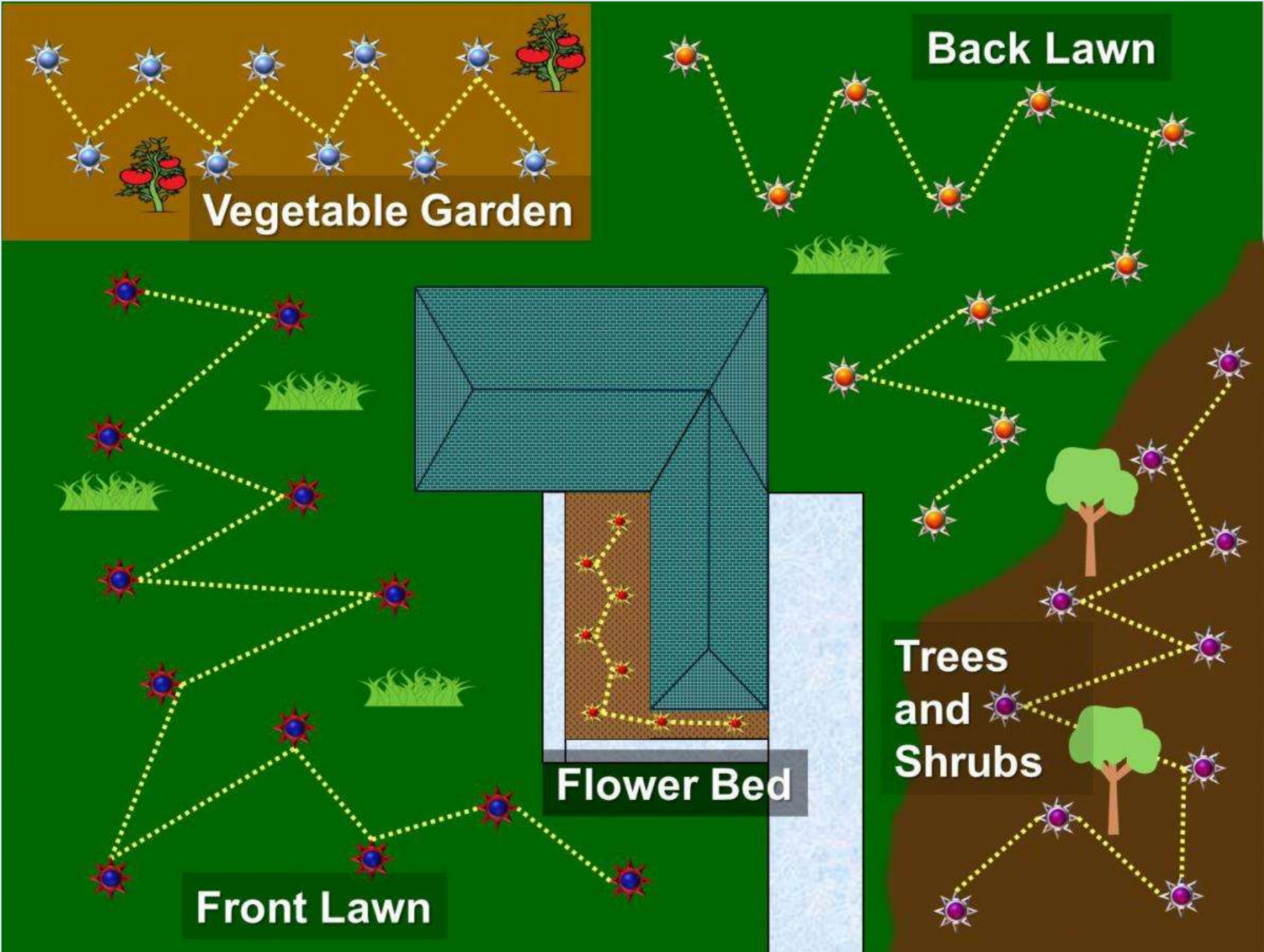
- Use appropriate tools, such as soil probe, spade, garden trowel or shovel
- Place collected soil in a **clean plastic bucket**



# Where to Sample

- Identify **unique areas** you wish to fertilize
- **Unique areas** should represent only one soil type and planting type, for example:
  - Lawn
  - Landscape trees & shrubs
  - Vegetable garden
  - Fruit trees
- **Sample noticeably different soil types** separately even if same planting type

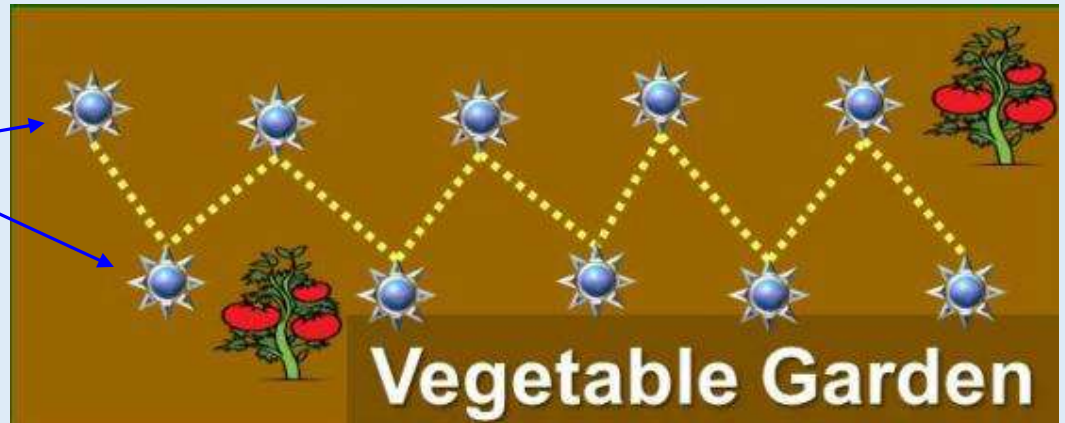




# Amount to Sample

- For each unique area, collect at least **six to eight soil cores** (subsamples) from random spots
  - For raised beds, collect 3-4 cores from each bed
- Combine cores in plastic bucket to make one composite sample

**Cores  
(subsamples)**

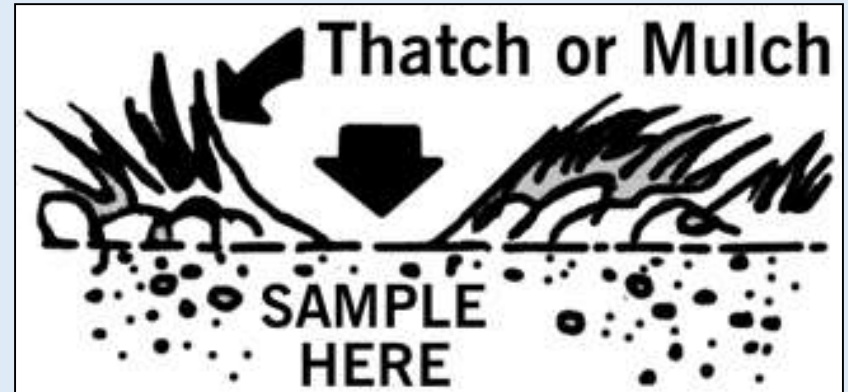


# Collecting Cores

- Avoid thatch or mulch
- Take a 'slice' of soil

## DEPTH:

- **Turf:** 4" deep
- **Landscape beds, vegetables:** 4 - 6" deep



# Mixing Cores

- For each unique area, **combine all cores** in a clean plastic bucket
- Thoroughly mix cores
  - If wet, allow sample to dry before filling box
- Use mixture to fill one box to the red fill line
- Fill one box for each unique area



# Label the Box

- Write your **name and address** on each box
- Make up a **sample ID**
  - **Up to 5 letters or numbers** that will help you remember where sample was taken
  - Examples: LAWN, GARDN, BACK
- Make sure filled to **red fill line**
- Close box flaps securely
  - Never tape box closed
  - Never put soil in plastic bag!





# Providing Sample Information

- **Preferred Method:** Enter online - [PALS website](#)
- Submit data electronically AND print copy of Soil Sample Information form to send with samples



# To Submit Information Online

- Create 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** (Dec → March), you will be prompted to pay with a credit card when submitting your sample information



# Submitting Handwritten Sample Information

- **Write legibly!**
- **Be consistent** in how you list your name and address from year to year to prevent duplication of names in the Agronomic database
- Directions on back of form, including **Planting Codes**
- **[Click here to download form](#)**

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## Lawn and Garden Planting Codes

020 Azalea / Camelia

022 Lawn, Centipede

023 Flower Garden

024 Vegetable Garden

025 Mtn. Laurel / Rhododendron

026 Lawn (not centipede)

028 Rose

029 Shrubs

030 Berries / Fruits / Nuts (except blueberries)

031 Landscape Tree (deciduous and evergreen)

032 Blueberries

# LAWN AND GARDEN SOIL SAMPLE INFORMATION- NC SOIL ONLY



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

**ROUTINE / PREDICTIVE SAMPLES**

April ~ Thanksgiving: NO FEE  
 December – March: \$4 / sample  
 Check online for exact dates

For laboratory results, go to [www.ncagr.gov/agronomi/pals](http://www.ncagr.gov/agronomi/pals)

SAMPLE INFORMATION	PAYMENT	CLIENT INFORMATION (PLEASE PRINT LEGIBLY)		OTHER RECIPIENT/SERVICE PROVIDER	
<b>SAMPLE DATE</b>  <div style="font-size: 24pt; color: red; text-align: center;">Today's Date</div>	<b>FEE TOTAL</b> <span style="font-size: 24pt; color: red;">\$</span> _____  <i>Check preferred- payable to NCDA&amp;CS</i>  <b>Please NO CASH</b>  <i>Reminders</i>  Use NCDA&CS sample boxes only. <u>Fill box with soil to red line.</u> Bags of any type not accepted.  Acquire boxes at our lab or NC Cooperative Extension office.	<b>LAST NAME</b> <b>FIRST NAME</b>  <div style="font-size: 24pt; color: red; text-align: center;">Gardener Dale</div>		<b>LAST NAME</b> <b>FIRST NAME</b>  	
<b>NC COUNTY (WHERE COLLECTED)*</b>  <div style="font-size: 24pt; color: red; text-align: center;">Chatham</div>		<b>ADDRESS</b>  <div style="font-size: 24pt; color: red; text-align: center;">5 Gardenview Ln</div>		<b>ADDRESS</b>  	
<b>NUMBER OF SAMPLES</b>  <div style="font-size: 24pt; color: red; text-align: center;">Up to 6 per form</div>		<b>CITY</b> <b>STATE</b> <b>ZIP</b>  <div style="font-size: 24pt; color: red; text-align: center;">Gardenville NC 27312</div>		<b>CITY</b> <b>STATE</b> <b>ZIP</b>  	
		<b>E-MAIL ADDRESS (needed for report notification)</b>  <div style="font-size: 24pt; color: red; text-align: center;">GreatGardener@gmail.com</div>		<b>E-MAIL ADDRESS</b>  	
		<b>PHONE (best contact number)</b>  <div style="font-size: 24pt; color: red; text-align: center;">919-542-8202</div>	<b>PALS #</b> _____ (if known)	<b>PHONE</b>  	<b>PALS #</b> _____ (if known)

\*By submitting this form to the NCDA&CS Agronomic Division, I attest that the accompanying samples were collected in North Carolina.

LAB NUMBER (LEAVE BLANK - LAB USE ONLY)	YOUR SAMPLE IDENTIFICATION (maximum of 5 characters- same as box)					LIME APPLIED WITHIN PAST 12 MONTHS			LAWN / GARDEN PLANTING CODE (Please see page 2)	Quick Tips
						lb / 1000 sq ft	Month	Year		
	L	A	W	N	1				<ul style="list-style-type: none"> <li>Please use only the planting codes on page 2.</li> <li>A bag of lime weighs 40 lb. If lime was applied over one year ago, leave the lime information blank.</li> <li><u>Please make sure your email address is correct and legible. You will be notified when the report is complete by email.</u></li> </ul>	
	L	A	W	N	2	40	9	2016		
			V	E	G					024
			B	B						032
	A	P	P	L	E					030

Thank you for using agronomic services to manage nutrients and safeguard environmental quality. -- Steve Troxler, Commissioner of Agriculture

# Spring Lawn and Garden Soil Test Drive

- Drop off completed samples AND forms between **March 20 – April 12**
- **Drop off box in Extension lobby**
- **We will deliver on April 18**
- **NO FEE!**
- **Expect results by email, mid May**
- **[Click here to learn more](#)**



# 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



# Shipping

- **Preferred method:** **DHS, FedEx or UPS** to the Agronomic Division's physical address:

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

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

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

# Soil Sample Drop Off

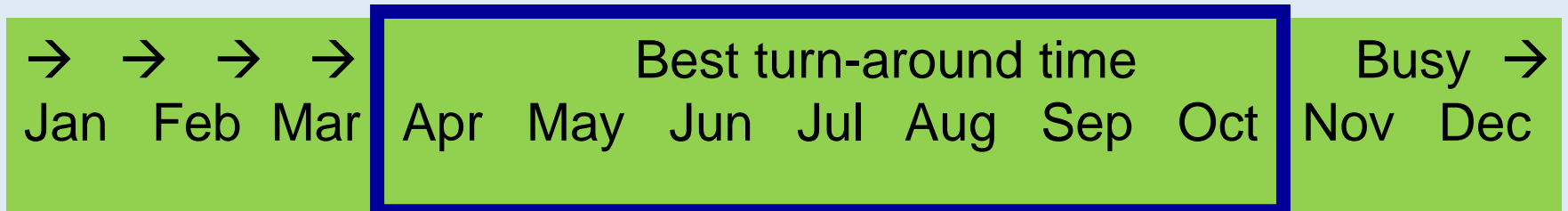
- You may deliver your samples to the Agronomic Division in Raleigh
- Please place them in the yellow cart on the loading dock





# Turn-around Time

- **Most of the year:** Samples analyzed within **one week** after arrival at the lab
- **During winter season:** Thousands of samples arrive at once - Sample turn-around may take **several weeks from October through February**
- **Peak season fee:** Dec. 1 – March 31, \$4/box



# Soil Test Reports

- **Are sent by email**
  - Write email address legibly!
- Look for email from:  
**AGRONOMICS LIMS**
- If it's been several weeks,  
check junk folder
- **Problems** – contact Agronomic Services  
Division, (919) 733-2655  
[www.ncagr.gov/agronomi](http://www.ncagr.gov/agronomi)



# Soil Test Reports

Also available on Agronomic Division's PALS website

[www.ncagr.gov/agronomi/pals](http://www.ncagr.gov/agronomi/pals)

**Search by last name**

**PALS is the Public Access Laboratory-information-management System that provides access to recent soil test, plant tissue, waste, solution, soilless media and nematode assay reports.**



**Report Quick Search**

Search

You may enter last name(comma) first name, business name, or report number

# Questions?

There is an Extension center in every NC County!

**Chatham County Center**

<http://chatham.ces.ncsu.edu>

919-542-8202

Contact your  
local county  
center

