



URI Master
Gardeners

Soil Testing
Webinar



Stephanie Serino

Educational Services

Coordinator

URI Hall of Fame Extension

MG Class of 2019

Soil Testing Webinar

- ▶ Moderator: Stephanie Serino Stephanielovesplants@gmail.com
- ▶ Technical Coordinator: Alan Newton
- ▶ **Speakers:**
 - ▶ Roger Jadosz: Soil Texture
 - ▶ Mary McNulty: Soil pH
 - ▶ Joe Carberry: Resources
 - ▶ John Gaynor: Process and Procedure





Soil Testing Events

Soil Testing 2019 Yearly Summary

- ▶ Soil Testing 2019 Yearly Totals:
- ▶ Clients (#) 1087
- ▶ Tests (#) 2210



2019 Soil Tests Month Tests (#)

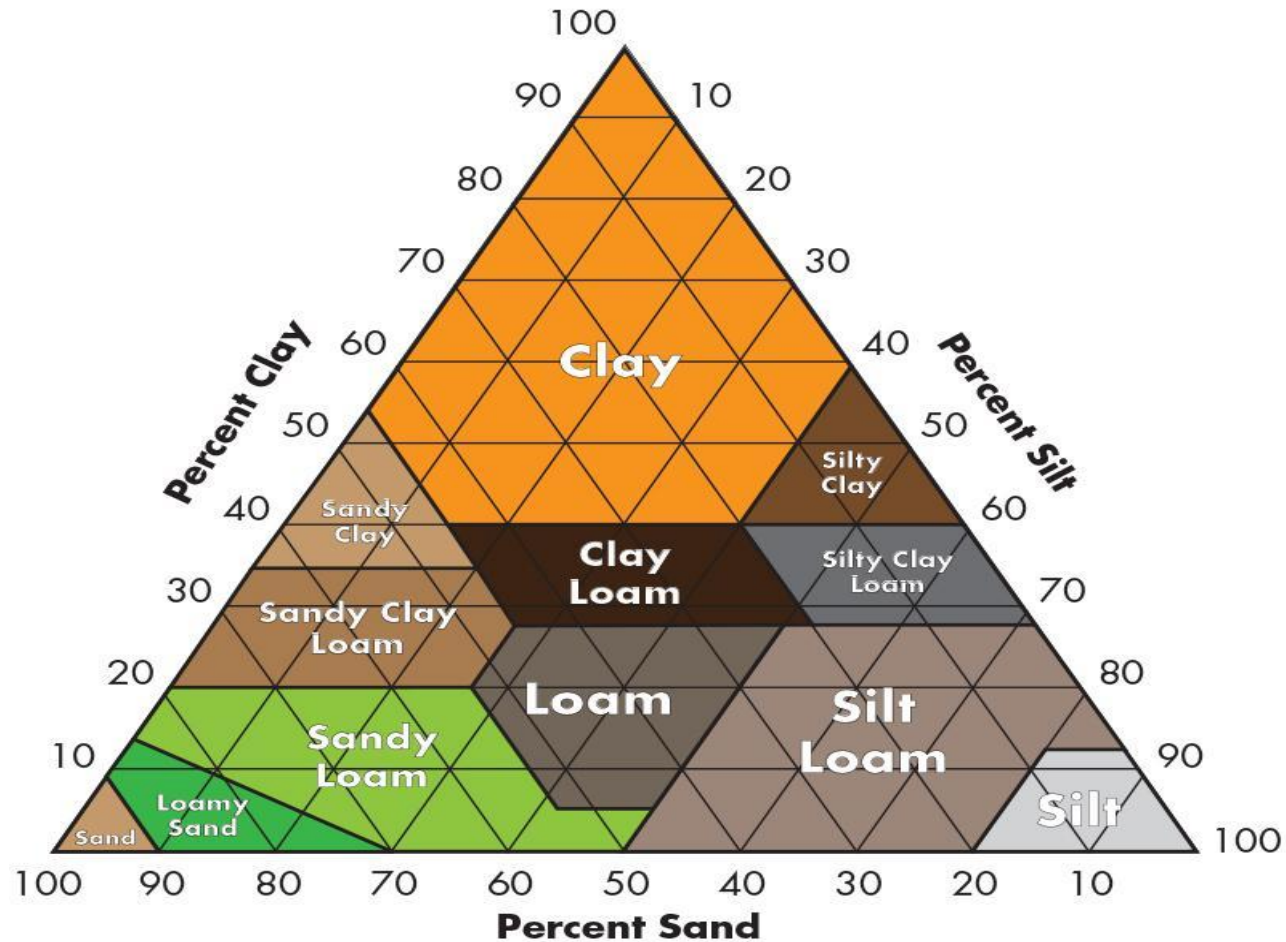
March: 49
April: 704
May: 569
June: 249
July: 137
Aug: 109
Sept: 206
Oct: 187





Roger Jadosz
URI Hall of Fame Extension
MG Class of 2012

Soil Texture Triangle



Soil Texture	Nutrient Holding Capacity	Water Infiltration Capacity	Water Holding Capacity	Aeration	Workability
Clay	Good	Poor	Good	Poor	Poor
Silt	Medium	Medium	Medium	Medium	Medium
Sand	Poor	Good	Poor	Good	Good



SOIL TEXTURE PYRAMID

Soil texture is an important soil characteristic that influences stormwater filtration rates. The soil texture triangle gives names associated with various combinations of sand, silt and clay. A coarse-textured or sandy soil is one comprised primarily of sand-sized particles. A fine-textured clayey soil is one dominated by tiny clay particles. Due to the strong physical properties of clay, a soil with only 20% clay particles behaves sticky, gummy clayey soil. The term loam refers to a soil with a combination of sand, silt, and clay sized particles. For example, a soil is 30% clay, 50% sand, and 20% silt is called a sandy clay loam. Which combination is optimal? Can we say a simple jar test (shown at right) is a method to determine soil texture.

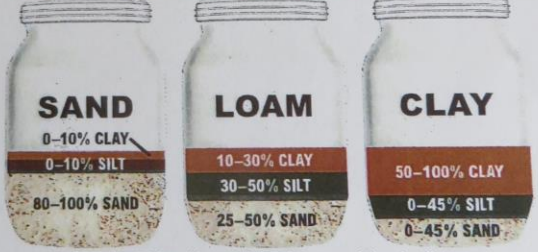
NUTRIENT AVAILABILITY CHART

Soil pH stands for "potential hydrogen" in a soil solution. Soil pH measures the acidity, shown here as <7, or alkalinity, >7 of the soil sample. Soil pH affects availability of plant nutrients. Most plants thrive in the 6.0-7.0 range. [I rearranged this graph, let me know if ok.]

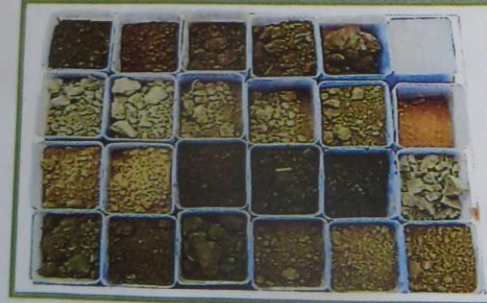


JAR TESTING FOR SOIL TYPE

The textural class of a soil is determined by the percentage of sand, silt, and clay. Soils can be classified as one of four major textural classes: (1) sands; (2) silts; (3) loams; and (4) clays. Can we add here that you folks do a jar test with soil samples folks submit? What is the goal here to have an even mix of all? If my yard is all sand, is that a bad thing? I'm just trying to make this poster understandable to the common non-gardener guy like me!



Note: Which one of these jars is the best to have in your yard, is loam the goal?



SOIL TEXTURE

Soil Texture is important because it determines soil characteristics that affect plant growth. The photo at left shows soil samples found in one small area of R.I. [I added this, can we say that?] Three of these characteristics are:

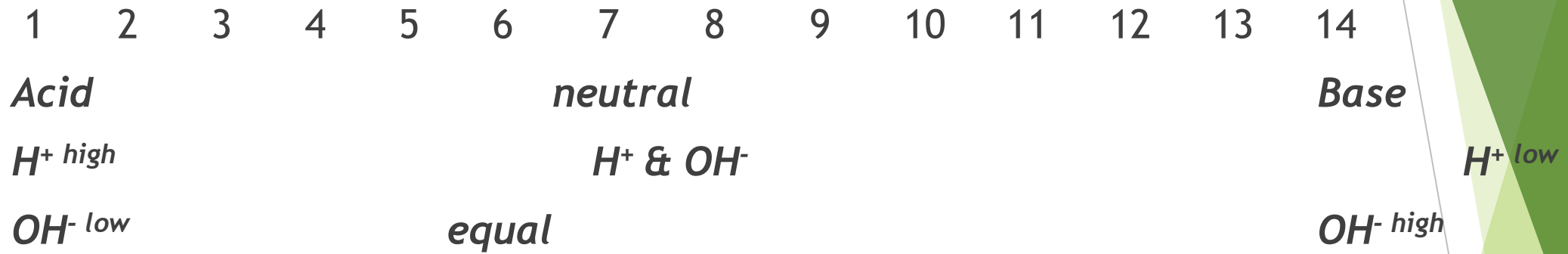
- 1.) water holding capacity of soil
- 2.) permeability is the ease with which air and water can pass
- 3.) soil workability

Maybe a call to action here? How to improve your soil texture based on MGP test results?



Mary McNulty
URI Hall of Fame Extension
MG Class of 2015

pH scale



pH- power (exponent) of Hydrogen

- ▶ pH of 7 = $1 \times 10^{-7}\text{M}$ (0.0000001) H^+ and $1 \times 10^{-7}\text{M}$ (0.0000001) OH^-
- ▶ **Same** concentration so the solution is *neutral*
- ▶ pH of 4 = $1 \times 10^{-4}\text{M}$ H^+ (0.0001) and $1 \times 10^{-10}\text{M}$ (0.0000000001) OH^-
- ▶ A lot of H^+ and a small amount of OH^-
- ▶ **More H^+** and **less OH^-** makes the solution an *acid*

How does this relate to your advice in soil testing?

- ▶ Most people would not realize that the pH of 4 has 1000 times more hydrogen ions than a pH of 7.
- ▶ Frequently I use fake money.
- ▶ If we think:
 - ▶ pH of 7 as being a \$1 bill,
 - ▶ pH of 6 as a \$10,
 - ▶ pH of 5 as \$100,
 - ▶ pH of 4 as \$1000
- ▶ They all differ by one zero but there is a big difference in having \$1 and \$1000.
- ▶ To raise the pH from 4 to 7 must be done slowly. This is to avoid shock in the good organisms that live in the soil.



How much should it be raised every six months?

- It should be raised only $\frac{1}{2}$ a pH point every 6 months.
- Use the formula:
 - _____square feet X 0.05 = _____pounds of lime
- Average bag of lime is 40 pounds and covers 800 sq feet.
- Advise them to check the pH every 6 months.



What advice do you give if the pH is high? (alkaline)

- ▶ Rhode Island soil is acidic. The pH should be a number lower than 7.
- ▶ If the pH is higher than 7, these are the questions you ask:
 - ▶ Have you ever thrown wood ash in the soil? (from a fireplace or fire pit)
 - ▶ Where do you get your compost from?

Always recommend the natural way to lower the pH.

Add crushed pine needles or peat moss to the soil. It might take a longer time to lower the pH than raise it.



Joe Carberry
MG Class of 2016


Useful resources and where to find them



- Soil Test Result Report
- Reference recourses
- Public hand outs
- Navigating the website

Soil Test Result Report

Soil Test Result Report



Date _____ Test Location _____

Name _____ Form No. _____

City _____ State _____ Zip Code _____

Email Address _____ Phone _____

Please check this box if you wish to receive science-based gardening information and notifications about upcoming workshops and events via email URI Cooperative Extension.

Sample ID	Crop Code / Location	Predominant Soil Texture	Ideal pH range	pH Test Result	Recommendations
A					Add Lime
B					Add Lime
C					Add Lime
D					Add Lime
E					Add Lime

CROP CODES


EL: Existing Lawn **FL:** Future Lawn **AP:** Annuals, Perennials **O:** Other plant
FT: Fruit Trees **V:** Vegetable Garden **TS:** Trees, Shrubs

IDEAL pH RANGES

Vegetables, flowers: 6.0 - 7.0 **Lawn:** 6.3 - 6.7

To avoid harming your soil, plants and surface water, **DO NOT** apply more than 5 pounds / 100 square feet of lime at a time. It takes 4-6 months to raise the soil pH by 0.5 after each application. Applying more than you should does not speed up the process (and may have detrimental effects on the environment). Want to know more about your soil (e.g. nutrient and/or contaminant levels)? Full soil testing is available through the University of Connecticut (www.soiltest.uconn.edu/sampling.php) and the University of Massachusetts (<https://ag.umass.edu/services/soil-plant-nutrient-testing-laboratory>).

NOTES:



GARDENING AND ENVIRONMENTAL HOTLINE

Have a question?

Send an email with your questions and photos anytime, or make a seasonal visit or phone call March through October, Monday–Thursday, 9 a.m.–2 p.m.

Call: 401.874.4836
Email: gardener@uri.edu
Address: URI Mallon Outreach Center 3 East Alumni Ave., Kingston, RI 02881
Visit: uri.edu/mastergardener

Soil Test Result Report

Soil Test Result Report

Date _____ Test Location _____

Name _____ Form No. _____

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CROP CODES
EL: Existing Lawn FL: Future Lawn AP: Annuals, Perennials O: Other plant
FT: Fruit Trees V: Vegetable Garden TS: Trees, Shrubs

IDEAL pH RANGES
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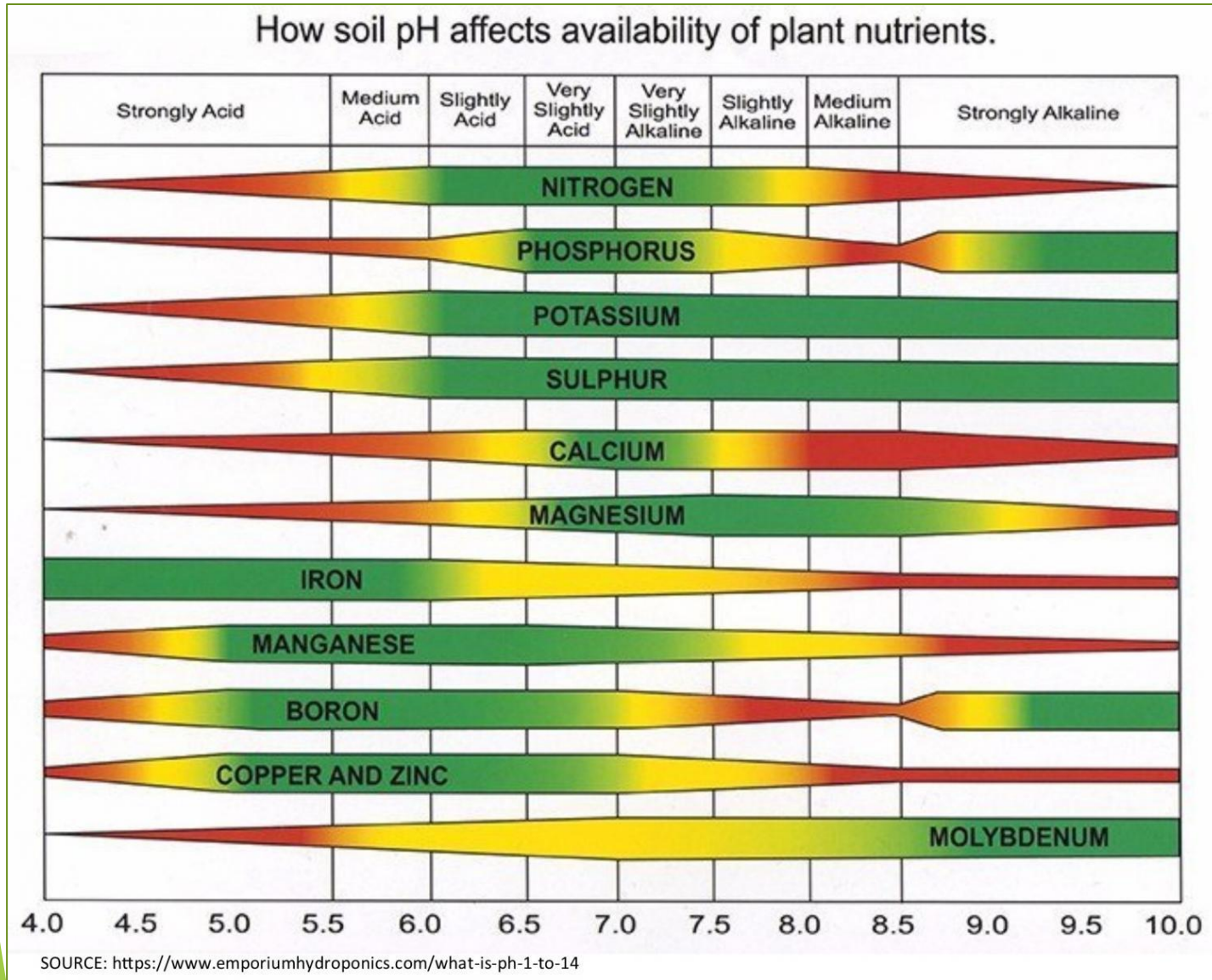
URI MASTER GARDENERS
GARDENING AND ENVIRONMENTAL HOTLINE
Call: 401.874.4836
Email: gardener@uri.edu
Address: URI Mallon Outreach Center 3 East Alumni Ave., Kingston, RI 02881
Visit: uri.edu/mastergardener

Filled out by tester/leader

Filled out by client

Filled out by tester/leader

Plant nutrient availability due to pH



pH preference lists for flowers, fruits and vegetables

Flowers, Ornamental Trees and Shrubs pH Preference List

Plant Name	pH Preference
Abelia	6.0 - 8.0
Acacia	6.0 - 8.0
Acanthus	6.0 - 7.0
Aconitum	5.0 - 6.0
Adonis	6.0 - 8.0
Ageratum	6.0 - 7.5
Ailanthus	6.0 - 7.5
Ajuga	4.0 - 6.0
Althea	6.0 - 7.5
Alyssum	6.0 - 7.5
Amaranthus	6.0 - 6.5
Anchusa	6.0 - 7.5
Androsace	6.0 - 7.5
Anemone	5.0 - 6.0
Anthrillis	4.0 - 6.0
Arbutus	6.0 - 8.0
Arenaria	6.0 - 7.5
Arisaema	6.0 - 7.5
Armeria	6.0 - 6.5
Arnica	6.0 - 8.0
Asperula	6.0 - 8.0
Asphodeline	5.5 - 7.5
Aster	6.0 - 7.5
Aubrieta	4.5 - 6.0
Azalea	6.0 - 7.5
Berginia	6.0 - 7.5
Bleeding Heart	6.0 - 7.5
Bluebell	5.0 - 6.0
Broomrape	6.0 - 7.5
Buddleia	6.0 - 7.5
Buphthalmum	6.0 - 7.5
Calendula	6.0 - 7.5
Camassia	6.0 - 7.5
Candytuft	6.0 - 7.5

Flowers, Ornamental Trees and Shrubs pH Preference List

Canna	5.0 - 7.5
Canterbury Bell	5.0 - 6.0
Carnation	4.5 - 6.0
Catalpa	6.0 - 7.0
Celosia	6.0 - 7.0
Centaurea	6.0 - 7.0
Cerastium	6.0 - 7.0
Chrysanthemum	6.0 - 7.0
Cistus	6.0 - 7.0
Clematis	6.0 - 7.0
Clivia	6.0 - 7.0
Crocus	6.0 - 7.0
Cyclamen	6.0 - 7.0
Dahlia	6.0 - 7.0
Delphinium	6.0 - 7.0
Diella	6.0 - 7.0
Dracopis	6.0 - 7.0
Drumstick	6.0 - 7.0
Dwarf Iris	6.0 - 7.0
Eranthis	6.0 - 7.0
Erigeron	6.0 - 7.0
Erubra	6.0 - 7.0
Euonymus	6.0 - 7.0
Flax	6.0 - 7.0
Flowering Quince	6.0 - 7.0
Flowering Spirea	6.0 - 7.0
Flowering Tobacco	6.0 - 7.0
Flowering Dogwood	6.0 - 7.0
Flowering Almond	6.0 - 7.0
Flowering Peach	6.0 - 7.0
Flowering Pear	6.0 - 7.0
Flowering Crabapple	6.0 - 7.0
Flowering Dogwood	6.0 - 7.0
Flowering Quince	6.0 - 7.0
Flowering Spirea	6.0 - 7.0
Flowering Tobacco	6.0 - 7.0
Flowering Dogwood	6.0 - 7.0
Flowering Almond	6.0 - 7.0
Flowering Peach	6.0 - 7.0
Flowering Pear	6.0 - 7.0
Flowering Crabapple	6.0 - 7.0

Fruit, Vegetable and Herb pH Preference List

Plant Name	pH Preference
Apple	5.0 - 6.5
Apricot	6.0 - 7.0
Avocado	6.0 - 7.5
Banana	5.0 - 7.0
Blackberry	5.0 - 6.0
Blueberry	4.0 - 6.0
Cantaloupe	6.5 - 7.5
Cherry	6.0 - 7.5
Cranberry	5.5 - 6.5
Current	6.0 - 8.0
Black	6.0 - 8.0
Red	5.5 - 7.0
White	6.0 - 8.0
Damson	6.0 - 7.5
Gooseberry	5.0 - 6.5
Grapevine	6.0 - 7.0
Grapefruit	6.0 - 7.5
Hazelnut	6.0 - 7.0
Hop	6.0 - 7.5
Lemon	6.0 - 7.0
Lychee	6.0 - 7.0
Mango	5.0 - 6.0
Melon	5.5 - 6.5
Mulberry	6.0 - 7.5
Nectarine	6.0 - 7.5
Peach	6.0 - 7.5
Pear	6.0 - 7.5
Pineapple	5.0 - 6.0
Plum	6.0 - 7.5
Pomegranate	5.5 - 6.5
Quince	6.0 - 7.5
Raspberry	5.0 - 6.5
Rhubarb	5.5 - 7.0
Strawberry	5.0 - 7.5
Watermelon	5.5 - 6.5

Vegetables & Herbs

Artichoke	6.5 - 7.5
Asparagus	6.0 - 8.0
Basil	5.5 - 6.5
Bean	6.0 - 7.0
Runner, Broad, French	6.0 - 7.5
Beetroot	6.0 - 7.5
Broccoli	6.0 - 7.0
Brussels Sprouts	6.0 - 7.5
Cabbage	6.0 - 7.5
Calabrese	6.5 - 7.5
Carrot	5.5 - 7.0
Cauliflower	5.5 - 7.5
Celery	6.0 - 7.0
Chicory	5.0 - 6.5
Chinese Cabbage	6.0 - 7.5
Chives	6.0 - 7.0
Corn, sweet	5.5 - 7.5
Cress	6.0 - 7.0
Courgettes	5.5 - 7.0
Cucumber	5.5 - 7.5
Fennel	5.0 - 6.0
Garlic	5.5 - 7.5
Ginger	6.0 - 8.0
Horseradish	6.0 - 7.0
Kale	6.0 - 7.5
Kohlrabi	6.0 - 7.5
Leek	6.0 - 8.0
Lentil	5.5 - 7.0
Lettuce	6.0 - 7.0
Marjoram	6.0 - 8.0
Marrow	6.0 - 7.5
Millet	6.0 - 6.5
Mint	7.0 - 8.0
Mushroom	6.5 - 7.5
Mustard	6.0 - 7.5
Olive	5.5 - 6.5
Onion	6.0 - 7.0
Paprika	7.0 - 8.5
Parsley	5.0 - 7.0
Parsnip	5.5 - 7.5
Pea	6.0 - 7.5
Peas	5.0 - 6.5
Pecan	4.0 - 6.0
Pepper	5.5 - 7.0
Peppermint	6.0 - 7.5
Pistachio	5.0 - 6.0
Potato	4.5 - 6.0
Potato, sweet	5.5 - 6.0
Pumpkin	5.5 - 7.5
Radish	6.0 - 7.0
Rice	5.0 - 6.5
Rosemary	5.0 - 6.0
Sage	5.5 - 6.5
Shallot	5.5 - 7.0
Sorghum	5.5 - 7.5
Soybean	5.5 - 6.5
Spearmint	5.5 - 7.5
Spinach	6.0 - 7.5
Swede	5.5 - 7.0
Thyme	5.5 - 7.0
Tomato	5.5 - 7.5
Turnip	5.5 - 7.0
Watercress	6.0 - 8.0

cdg 8-11-08

pH preference lists for flowers, fruits and vegetables

Extension Service
West Virginia University

Horticulture

John W. Jett, Horticulture Specialist
WVU Extension Service May 2005

Plant pH Preferences
Due to variations in soil and climate authors do not always agree about the pH preferences of crops, but the following is a range that should be acceptable.

Ornamentals and Houseplants

pH 4.5		pH 5.5 – 6.75	
Anemone	Iris kaempferi	Begonia	Clarkia
Autumn Gentians	Mecanopsis	Chrysanthemum	Cineraria
Gentian		Flame nettle (Coleus)	Fuchsia
		Gloxinia (Sinningia)	Grasses (Agrostis sp)
		Lupin	Marigold (Tagetes)
		Mother in law tongue (Sanseveria)	
		Pansy (Viola)	Poinsettia (Euphorbia)
		Sanseveria	
		Slipperwort (Calceolaria)	Violet (Viola)
pH 4.5 – 5.5		pH 5.5 – 7.5	
Aspidistra	Orchid (most)	Cosmos (Cosmea)	
Azalea	Pachysandra terminalis	Indian shot (Canna)	
Camelia	Parlour palm (Aspidistra)	Nasturium (Tropaeolum)	
Columnea			
pH 5.5		pH 6.0	
Auricularia	Pitcher plant (Nepenthes)	Campanula	Clivia
Cactus (most)	Primrose (Primula)	Crassula	Fittonia
Crassula	Urn plant (Aechmea)	Grevillia	Gynura
Norfolk Island pine (Auricularia)		Hoya (wax flower)	
		Michelmas daisy (Aster)	
		Neomarcia	Plumbago
		Poor man's orchid (Schizanthus)	
		Primula	Purslane (Portulaca)
		Rose (Rosa)	
		Shrimp plant (Dredgerella)	
		Snakeskin plant (Fittonia)	
		Swainsonia	Tuberose
		Waterlily (Nymphaea)	
pH 5.5 – 6.0		pH 6.0 – 6.5	
Amaryllis	Anthurium	Alyssum	
Bilbergia	Butterfly flower (Schizanthus)		
Calliopsis (Coreopsis)	Christmas cactus (Zygocactus)		
Cissus	Clary (Salvia)		
Clerodendron	Creeping fig (Ficus pumilla)		
Croton	Dracaena		
Dumb cane (Diffenbachia)			
Flamingo flower (Anthurium)			
Gardenia	Iresine		
Kangaroo vine (Cissus)			
Maranta	Monstera		
Pandanus	Peperomia		
Philodendron	Phlox		
Pick a back (Ptolmeia)			
Prayer plant (Maranta)			
Rubber plant (Ficus)			
Silk oak (Grevillia)			
Swiss cheese plant (Monstera)			
Tradescantia	Zebrina		

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Pounds of lime per square footage

HOW MUCH LIME ? 2/14/2013

WIDTH IN FEET	LENGTH IN FEET	SQUARE FOOTAGE	=	POUNDS OF LIME REQUIRED
1	1	1	=	0.05
3	3	9	=	0.45
5	5	25	=	1.25
8	8	64	=	3.2
10	10	100	=	5
12	12	144	=	7
15	15	225	=	11
18	18	324	=	16
20	20	400	=	20
25	25	625	=	31
30	30	900	=	45
35	35	1225	=	61
40	40	1600	=	80
45	45	2025	=	101
50	50	2500	=	125
75	75	5625	=	281
100	100	10000	=	500
250	250	62500	=	3125
500	500	250000	=	12500
1 ACRE	208.71032	208.71032	43560	= 2178

Rate of application is: 50 POUNDS PER 1000 SQUARE FEET
 This will raise the pH .5 of a point. There should be six months between applications of lime.

If the square footage is known multiply the square footage by .05 to determine the amount of lime required

Free Soil pH Testing Brochure

Permanent Soil-Testing Sites
 Casey Farm
 2325 Boston Neck Road, Saunderstown, R.I.
 Second Saturday, 8:30 a.m.–12:30 p.m.
 June through October

THE UNIVERSITY OF RHODE ISLAND COOPERATIVE EXTENSION

URI MASTER GARDENER PROGRAM PRESENTS

FREE SOIL PH TESTING

Test your soil this growing season!



URI MASTER GARDENERS
Cultivating the future

Soil is key to a successful garden.
 January 1, 2020

Testing Your Soil pH is Simple



HOW TO TAKE A SOIL SAMPLE

- Use a spade to collect a thin slice of soil from the root zone, about 6 inches down. Take about 1/2 cup from each of several spots in the same area (for example, the lawn or the vegetable garden) and mix them together. Allow the soil to air dry on newspapers. Put about 1 cup of the mixed soil into a clean plastic or paper bag and label it with the area it came from.
- Bring it in for a **FREE test!** Trained URI Master Gardener volunteers will test your soil's pH, evaluate its texture and give you a report with recommendations for actions to improve it.

Need to Dig Deeper?
 To find out more about the nutrients, lead levels, and soil characteristics of your soil, you may complete a laboratory test at the University of Connecticut or the University of Massachusetts Soil Labs. This is recommended every three years or when renovating an area of the garden. Both laboratories charge a nominal fee for this service.
 University of Connecticut: soiltest.uconn.edu/sampling.php
 University of Massachusetts Soil Labs: soiltest.umass.edu/ordering-information

Permanent Soil-Testing Sites

Attleboro Farmers Market 281 County St., Attleboro, Mass. Second Saturday, 9 a.m.–1 p.m. June through October	Casey Farm 2325 Boston Neck Road, Saunderstown, R.I. Second Saturday, 8:30 a.m.–12:30 p.m. June, July, September First Saturday, 8:30 a.m.–12:30 p.m. August and October
Cumberland Monastery 1464 Diamond Hill Road, Cumberland, R.I. Third Saturday, 9–11 a.m. April through September	Fishermans Farmers Market Point Judith Road (Rt. 108), Narragansett, R.I. First and third Sunday, 9–11 p.m. June through August
Goddard Park Farmers Market 348 Ince Road, Warwick, R.I. Last Friday of the month, 9–11 p.m. April through October	Kettle Pond Visitor's Center 80 Bend Road, Charlestown, R.I. Second and fourth Thursdays, 1–4 p.m. May, June, September Fourth Thursday only, 1–4 p.m. April, July, August
Mount Hope Farm 259 Metacom Ave., Bristol, R.I. Second Saturday, 9 a.m.–noon April through September	Prescott Farm 2009 W. Main Road, Middletown, R.I. First Sunday, 9:30 a.m.–noon April through October
Rhode Island Veterans Home 450 Metacom Ave., Bristol, R.I. Third Sunday, 9 a.m.–noon April, May, September, October Third Sunday, 9 a.m.–noon June 2, 9 a.m.–noon	Roger Williams Park Botanical Center Roger Williams Park, Providence, R.I. First Saturday, 11 a.m.–2 p.m. (Second Saturday for holidays) March through June, September through October
URI East Farm 1 E. Farm Road, Kingston, R.I. Second and fourth Saturdays, 9 a.m.–12:30 p.m. May, June and September Fourth Saturday, 9 a.m.–12:30 p.m. July and August	URI Mallon Outreach Center 3 E. Alumni Ave., Kingston, R.I. Monday through Thursday, 9 a.m.–2 p.m. March through October
Wilcox Park 44 Broad St., Westerly, R.I. Second and fourth Saturdays, 9 a.m.–noon June through October	

Visit uri.edu/mastergardener for a full list of soil-testing times and locations.
 URI reserves the right to cancel in the event of inclement weather.



Free Soil pH Testing Brochure



Also available in Spanish!

Types of Events

Permanent Soil-Testing Sites

Attleboro Farmers Market

201 County St., Attleboro, Mass.
Second Saturday, 9 a.m.–1 p.m.
June through October

Casey Farm

2325 Boston Neck Road, Saunderson, R.I.
Second Saturday, 8:30 a.m.–12:30 p.m.
June, July, September
First Saturday, 8:30 a.m.–12:30 p.m.
August and October

Cumberland Monastery

1464 Diamond Hill Road, Cumberland, R.I.
Third Saturday, 9–11 a.m.
April through September

Fishermans Farmers Market

Point Judith Road (Rt. 108), Narragansett, R.I.
First and third Sunday, 9–1 p.m.
June through August

Goddard Park Farmers Market

345 Ives Road, Warwick, R.I.
Last Friday of the month, 9–1 p.m.
April through October

Kettle Pond Visitor's Center

50 Bend Road, Charlestown, R.I.
Second and fourth Thursdays, 1–4 p.m.
May, June, September
Fourth Thursday only, 1–4 p.m.
April, July, August

Mount Hope Farm

250 Metacom Ave., Bristol, R.I.
Second Saturday, 9 a.m.–noon
April through September

Prescott Farm

2009 W. Main Road, Middletown, R.I.
First Sunday, 9:30 a.m.–noon
April through October

Rhode Island Veterans Home

480 Metacom Ave., Bristol, R.I.
Third Sunday, 9 a.m.–noon
April, May, September, October
Third Sunday, 9 a.m.–noon
June 2, 9 a.m.–noon

Roger Williams Park Botanical Center

Roger Williams Park, Providence, R.I.
First Saturday, 11 a.m.–2 p.m.
(Second Saturday for holidays)
March through June,
September through October

URI East Farm

1 E. Farm Road, Kingston R.I.
Second and fourth Saturdays,
9 a.m.–12:30 p.m.
May, June and September
Fourth Saturday, 9 a.m.–12:30 p.m.
July and August

URI Mallon Outreach Center

3 E. Alumni Ave., Kingston, R.I.
Monday through Thursday, 9 a.m.–2 p.m.
March through October

Wilcox Park

44 Broad St., Westerly, R.I.
Second and fourth Saturdays, 9 a.m.–noon
June through October



One-time Events

- Businesses
 - Amica
 - Lowe's
 - Home Depot
 - MetLife
- Nurseries
 - Wildwood
 - Farmer's Daughter
 - Hattoy's
 - Pezza Farm
- Flower Shows
 - Rhode Island Home and Garden
 - Attleboro Flower Show



Composting - URI

THE UNIVERSITY OF RHODE ISLAND COOPERATIVE EXTENSION

SMALL-SCALE COMPOSTING

WHAT IS COMPOSTING AND WHY IS IT GOOD?

Composting is the managed practice of the biological breakdown of organic matter, such as leaves and coffee grinds, into a rich soil amendment called humus. Using humus in the garden creates healthy landscapes and conserves precious landfill.

- Reduces need for fertilizers and soil conditioners • Helps reduce plant diseases and pests
- Adds beneficial microbes to the soil • Lightens clay soils and helps sandy soil hold water
- Improves moisture retention and soil structure • Increases organic matter in the soil

WHAT GOES IN?

BROWNS (3 PARTS CARBON)

Lack of carbon and too much nitrogen will lead to odor problems

Woody Prunings

Newspaper Shreds

Straw

Wood Chips

Shredded Leaves

GREENS (1 PART NITROGEN)

Lack of nitrogen is one reason a pile fails to heat up properly

Coffee Grounds

Fruit or Vegetable Scraps

Seaweed

Manure (see food safety section)

Grass Clippings

S
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P

THE SCIENCE OF COMPOSTING

Microorganisms, fungi, insects, worms and other creatures convert carbon from dead plants into energy for their own growth, releasing carbon dioxide into the air. They also recycle nutrients from decaying plant matter into their own bodies which ends up back in the soil.

THINK BIG WE DO

THE UNIVERSITY OF RHODE ISLAND EXTENSION OUTREACH CENTER

THINK BIG WE DO

How to Compost With Worms

Composting with worms (also called vermicomposting) is a practical way to keep valuable food scraps out of the landfill. Worms recycle the food scraps and various types of organic material and convert it into a valuable soil amendment called worm castings. This method of composting works extremely well indoors.

Step 1: Making or Buying a Worm Bin

Building a worm bin can be very simple and inexpensive. A 10-gallon plastic bin is a good size to start out with. Drill small holes along the bottom & top of all four sides, and a few on the top and bottom of the bin. This will allow oxygen to be distributed through the bin. Worm bins can also be made out of wood containers. There are also many types of worm compost bins available for purchase.

Step 2: Add Bedding

There are many different materials that can be used as bedding for your worms. Eventually the worms will eat the bedding and convert it into castings. Damp shredded newspaper and coconut coir is one example of bedding material. Fill your bin halfway with one or both of these items. Add a cup or two of soil to the bedding which aids in worm digestion.

Step 3: Buy Worms!

Red Wigglers (*Eisenia fetida*) are recommended for vermicomposting. It is not recommended to use worms from your backyard. One pound of red wigglers will eat about 1.5-2.0 lbs of food scraps a week. Red wiggler worms are available locally at some farmers markets; and breeders can be found online by doing a simple search "ri red wigglers."



Composting - RI Resource Recovery

FOOD SCRAP COMPOSTING: Do-It-Yourself



BUILD OR BUY A BIN (OR TWO!)



Search online for "DIY compost bins" if you want to build your own, or purchase bins at Resource Recovery's Admin. Office, M-F, 8:00 AM - 4:00 PM. Cash, check, or money order - NO CREDIT CARDS.



WHAT GOES IN MY BIN?

Browns (3 parts)

Leaves • Twigs • Dead flowers • Straw
Corn stalks & husks • Shredded cardboard & paper
Paper towels & napkins • Vacuum cleaner bag contents
Dryer lint • Untreated wood chips & sawdust

Greens (1 part)

Vegetable & fruit peels, cores, rinds, scraps
Spoiled vegetables & fruit • Eggshells
Coffee grounds, filters & tea bags • Grass clippings
Fresh plant & yard trimmings

Do NOT Compost

Meats, fish & poultry • Bones • Dairy products
Egg whites & yolks • Fats, oil & grease • Pet waste
Weeds laden with seeds • Diseased plants

USING YOUR BIN

- Use an airtight scrap pail on your counter or keep a scrap container or bag in the fridge or freezer.
- Chop up larger scraps into smaller pieces.
- Keep a 3:1 ratio of browns to greens.
- Your pile should feel like a wrung-out sponge. If it is dry, add a little water. If it is wet, add some browns.
- Your pile needs oxygen. Use a garden tool, like a hoe or a pitchfork, to stir up contents weekly.

HARVESTING COMPOST

One bin: Use a screen built with 2x4s and wire mesh to separate recognizable scraps from compost. Add scraps back into bin.



Two bins: Stop adding materials to bin #1. Start using bin #2. Continue to stir up contents of bin #1 until all scraps break down.



USING COMPOST

- **Curing:** Compost with no recognizable scraps needs to sit for about 4 weeks before it is at ambient temperature, and ready to use. One way to ensure compost is cured is to apply it 4 weeks before planting.
- **New beds:** Till 1-3" into top 12" of dark soil or 2-6" into light soil.
- **Maintenance:** Once fully cured, place on areas that you have already planted.
- **Basic potting mix** = 1/3 compost + 1/3 sand + 1/3 soil

NEED MORE?

Compost approved for use in organic growing is available by the yd³ (1/2 yd³ min.) or in 40 lb bags at RIRRC, M-F, 6 AM - 3:45 PM & Sat. 6 AM - 12 PM. Pay at Scalehouse with cash, check, or credit card. Check rirc.org for current pricing.

Resource Recovery | 401-942-1430 | www.rirc.org
Date of Publication: 2/2016. Visit www.rirc.org for the most up-to-date version.

LEAF & YARD COMPOSTING: Do-It-Yourself



SHRED 'EM!

You can compost leaves as-is, but shredding them first is very helpful, especially for tough oak leaves, as it results in faster decomposition. Rake up leaves and shred them with a lawn mower or use a leaf blower's vacuum and bag attachments.

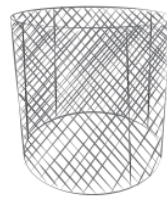


OPTION 1: MULCH IN PLACE OR ADD TO BEDS

You can mulch leaf and yard debris right onto your soil using the mulching attachment on your lawn mower, or simply by removing the bag. Grass clippings and shredded leaves will remain on your lawn, where air and rain will return them to your soil. If you have garden beds, you can place mulched leaves on them in the fall in preparation for spring planting.



OPTION 2: MAKE A PILE OR BUILD/BUY BINS



You can just rake leaves (or better yet, shredded leaves) into a pile in the corner of your yard—no bin required! If you want to keep things tidy, buy a bin at RIRRC or make a simple leaf bin using galvanized chicken wire, tin snips, and four metal stakes. Ten feet of chicken wire will make a bin that holds 16 bags of shredded leaves!

WHAT GOES IN MY PILE/BIN

- **Browns:** Leaves, twigs, dead plants and flowers, untreated wood chips, and straw.
- **Greens:** Fresh grass clippings; add used coffee grounds for a boost of nitrogen.

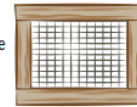


MAINTAINING YOUR PILE/BIN

- Your pile should feel like a wrung-out sponge. If it is dry, add a little water.
- Your pile needs oxygen. Use a garden tool, like a hoe or a pitchfork, to stir up contents weekly.

HARVESTING COMPOST

- **One bin:** Use a screen built with 2x4s and wire mesh to separate recognizable debris from compost. Add debris back into bin.



- **Two bins:** Stop adding materials to bin #1. Start using bin #2. Continue to stir up contents of bin #1 until all debris breaks down.



USING COMPOST

- **Curing:** Compost with no recognizable debris needs to sit for about 4 weeks before it is at ambient temperature, and ready to use. One way to ensure compost is cured is to apply it 4 weeks before planting.
- **New beds:** Till 1-3" into top 12" of dark soil or 2-6" into light soil.
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Resource Recovery | 401-942-1430 | www.rirc.org
Date of Publication: 3/2017. Visit www.rirc.org for the most up-to-date version.



URI MASTER GARDENERS

Cultivating the future

Weeds and soil

THE UNIVERSITY OF RHODE ISLAND COOPERATIVE EXTENSION

WHAT THE WEEDS SAY ABOUT YOUR SOIL

WEED TYPE	CONDITION									
	Low nitrogen in soil	Soil is compacted	Area is too shady	Area is too wet	Grass is thin	Area is too dry	Low soil pH level	Soil is poorly drained	Mow height is too low	
ANNUAL BLUEGRASS										
BITTERCRESS										
CINQUEFOIL										
COMMON CHICKWEED										
CRABGRASS										
DANDELION										
GOOSEGRASS										
GROUND IVY										
HENBIT										
KNOTWEED										
MOSS										
MOUSE-EAR CHICKWEED										
PLANTAIN										High pH
RED SORREL										
SPOTTED SPURGE										
WHITE CLOVER										
MILD VIOLET										
YELLOW NUTSEDGE										

NOTE: Weeds in your lawn may indicate

RECOMMENDATIONS

THE UNIVERSITY OF RHODE ISLAND COOPERATIVE EXTENSION

WEED IDENTIFICATION

FIND YOUR WEED. THEN LOOK ON BACK FOR WHAT IT MEANS

4 INCH 1.3.0
CINQUEFOIL *Plantain* sp. Photo by Heidi Hillmeier (J.G. CC BY-SA 4.0)

COMMON CHICKWEED *Datura media* Photo by Heidi Hillmeier (J.G. CC BY-SA 4.0)

CRABGRASS *Digitaria sp.* Photo by Richard Arthur Norton (J.G. CC BY-NC)

DANDELION *Taraxacum sp.* Photo by David

4 INCH 1.3.0
HENBIT *Lamium amplexicaule* Photo by Kaitlin Cronin (CC)

KNOTWEED *Trigonon arvense* Photo by Daniel Gilman (CC BY-SA 3.0)

MOSS *Strawmoss* Photo by David

MOUSE-EAR CHICKWEED *Cerastium arvense* Photo courtesy Wikipedia (Public Domain)

4 INCH 1.3.0
SPOTTED SPURGE *Euphorbia maculata* (Public Domain)

WHITE CLOVER *Trifolium repens* Photo by Heidi & Ken Star (J.G. CC BY-NC)

WILD VIOLET *Viola arvensis* sp. Photo by James Doolittle (J.G. CC BY-SA 3.0)

YELLOW NUTSEDGE *Cyperus rotundus* Photo courtesy Wikipedia (Public Domain)

401.874.2900 • 3 East Alumni Avenue, Kingston, RI 02881



Lawns

WHAT IS WRONG WITH MY LAWN?

UMass
Extension

CENTER FOR AGRICULTURE

Lawn problems can occur in small areas or larger patches and entire lawns can be affected. Sometimes the problems are due to poor growing conditions, improper lawn care practices, or extreme weather conditions. Other problems can be due to specific insect pests or diseases.

The following is a guide to help you decide what conditions might be causing problems, with some suggestions for preventive and corrective measures.

AFTER WINTER, BUT BEFORE SPRING GREEN-UP:

Problem	What to Look For	What to Do
Winter desiccation	Large areas of straw-colored grass especially where exposed to wind with little snow cover.	In fall: <ul style="list-style-type: none">▪ Discourage snow molds by mowing as long as grass grows in the fall.▪ Avoid mid-fall nitrogen applications that delay dormancy.▪ Prevent deep piling of snow along walks and driveways. In winter:
Spring frost damage	New leaves killed back.	
Water and ice damage	Straw-colored or rotted grass, especially where water collects on frozen soil.	

Where to find literature?

<https://web.uri.edu/mastergardener/>

The screenshot shows the website for the URI Master Gardener Program. At the top, there is a navigation bar with links for ABOUT URI, ADMISSION, ACADEMICS, CAMPUS LIFE, ATHLETICS, RESEARCH & OUTREACH, and GLOBAL. Below this is the University of Rhode Island logo and a search bar. The main header features the URI Master Gardeners logo and the text "URI MASTER GARDENER PROGRAM Cooperative Extension". A secondary navigation bar includes HOME, PROGRAMS, EVENTS, SERVICES, GET INVOLVED, and CONTACT US.

The main content area is titled "PROGRAM LITERATURE CATALOG". It includes a sidebar on the left with links such as "Master Gardener Home", "Become a Master Gardener", "Local Food System Initiative", "Educational Workshops and Events", "School Garden Initiative", "Services", "Gardening Resource Library", "Master Gardener Volunteer Login", "Contact Us", and "2019 Impact Report". A "Make a Gift" button is also present in the sidebar.

The central "PROGRAM LITERATURE CATALOG" section contains the following text: "Each factsheet/ resource below has a corresponding letter and number. Select the resources you'd like printed and submit a [Printed Copy Request Form](#), referencing the letter and number for each resource". Below this text is a list of 12 categories, each in a blue button: A. URI Extension Factsheets, B. Composting, C. 2020 Promotional Material, D. Diseases, E. Garden to Table (Food Safety), F. Forms, G. Water Related, H. Gardening with Youth, I. Health Fairs, J. Insects, K. Lawn Care, and L. Native Plants.

On the right side, there is a "Master Gardener's Portal" section with links for "Volgistics Login", "Project Descriptions and Leader Contact", "Core Training Class Recordings", "Continuing Education Class Recordings", "Leave of Absence and Emeritus Status", "Pin Replacement Form", "Documents", "Continuing Education Calendar", "Program Literature Catalog", and "Printed Copy Request Form". Below this is an "Archived Newsletter" section with the text "The Dirt - July 30, 2020: Tomatoes, Videographers Wanted, Enter Hours".





John Gaynor
URI Hall of Fame Extension
MG Class of 1983

Soil Testing Potential Leader's Training



- PREPARING FOR A SOIL TEST
- SETTING UP FOR THE EVENT
- DURING THE SOIL TESTING EVENT
- METER & CALIBRATION
- QUESTIONS THAT MIGHT BE ASKED REGARDING SOIL TEST RESULTS

SOIL TESTERS

- ▶ Soil testing events will be staffed by Blue Pin Master Gardeners who have completed the Soil Testing Training Program and other testers-in-training.
- ▶ This training will be supplemented with “on the job coaching” by an experienced Soil Tester for the next event(s) that you participate in.
- ▶ Each soil tester must read and become familiar with the material in the Soil Testing Handbook.
- ▶ Each Soil Testing Event must have an experienced Soil Tester in charge of the event, referred to as the “Soil Test Event Leader.”

The Soil Test Event Leader is responsible for:

1. The proper set up of the Soil Test Table.
2. Making available an adequate supply of pre-numbered Soil Test Forms and pre-numbered cups.
3. Ensuring all functions are handled according to protocol and the SOP
4. Ensuring any less-experienced Soil Testers are given adequate coaching and experience at performing the different functions.



SOIL TESTING TABLE - FLOW CHART



STATION 1 PROCESS

SAMPLES ARE RECEIVED

INFORMATIONAL FORM IS FILLED OUT

MATERIALS

SOIL TESTING FORMS

PEN/PENCILS

SOIL SAMPLES



STATION 2 PROCESS

IDENTICAL NUMBER
ASSIGNED TO FORM & CUP

SIFT SOIL SAMPLE TO
REMOVE STONES

PLACE A TEASPOON OF SOIL
IN TO CUP AND ADD A
SMALL AMOUNT OF
DISTILLED WATER . STIR TO
A PASTY MIX.

MATERIALS

Sm. PAPER CUPS PRE
NUMBERED

SIFTER

DISTILLED WATER

PLASTIC TEASPOONS

PAPER TOWELS



STATION 3 PROCESS

Ph METER IS PLACED IN CUP
OF PREPARED SOIL SAMPLE

A READING IS TAKEN WHEN
DISPLAY SETTLES DOWN AND
BARLY MOVES.

ENTER Ph READING ON FORM

METER IS RINSED WITH
DISTILLED WATER

MATERIALS

CALIBRATED PH METER

CONTAINER OF DISTILLED
WATER FOR RINISING METER

PEN/PENCILS

PAPER TOWELS

STATION 4 PROCESS

FORM IS REVIEWED
AND ADDITIONAL
COMMENTS NOTES
MADE IF NECESSARY.

COMPLETED FORM
FILED IN NUMERICAL
ORDER FOR PICK UP

MATERIALS

CONTAINER FOR
COMPLETED FORMS

PEN/PENCIL

Activities of each station can be combined depending on the number of soil test expected.
Meters should be calibrated before testing starts. Follow procedure for calibrating pH meter.

Soil Testing Event Report

Event Location:

Host:

Event Date:

Leader:

Master Gardener Volunteers:

Soil Testing Only - # of Tests: _____ # People _____

Should this event be attended again: Yes _____ No _____

Was this a diversified group?

Any unusual occurrences or weather conditions:

Any advertising by host?

Comments/Questions:

Please submit report **within 2 days** after event to: Melissa Hughes - mhughes30@cox.net

CC-Stephanielovesplants@gmail.com

Questions



What should you ask a person when the pH results show a pH of 7 or above?

I had my soil tested last year and just retested and I have the same results. How is that possible?

When can I apply lime to my soil ?