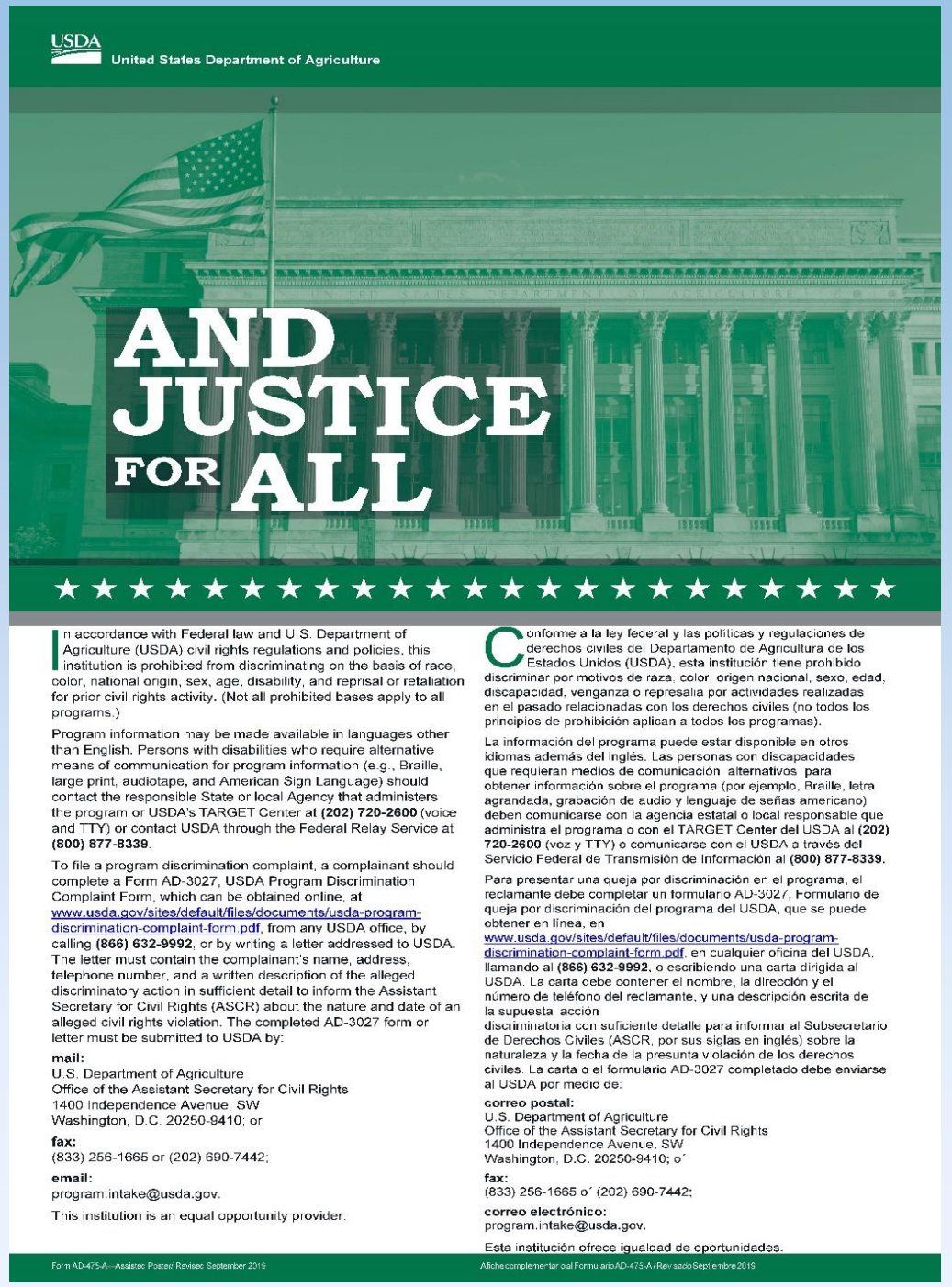
Vegetable Garden Planning

Charles County Maryland Master Gardeners

UNIVERSITY OF MARYLAND EXTENSION

GROW IT · EAT IT

A MASTER GARDENER PROGRAM



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MASTER GARDENER

Charles County Master Gardeners
GROW IT EAT IT Education
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Welcome

- The mission of the University of Maryland Extension Grow It Eat It (GIEI) Program is to promote backyard and community food production.
- Master Gardeners teach classes and workshops, develop demonstration gardens, and educate Marylanders on how to produce their own affordable and healthy food using sustainable gardening practices in their homes, communities, and school gardens.

https://go.umd.edu/giei

Growing a Food Garden - The Four P's

1. **Plan** the site
   - Location
   - Type of garden
   - Size

2. **Prepare** the soil
   - Prepare the area
   - Test
   - Improve

3. **Plant**
   - What
   - When
   - Seeds or transplants

4. **Produce** and maintain
   - Food and water
   - Weeds
   - Pests

The 1st P – Plan the Site
(Location, location…)

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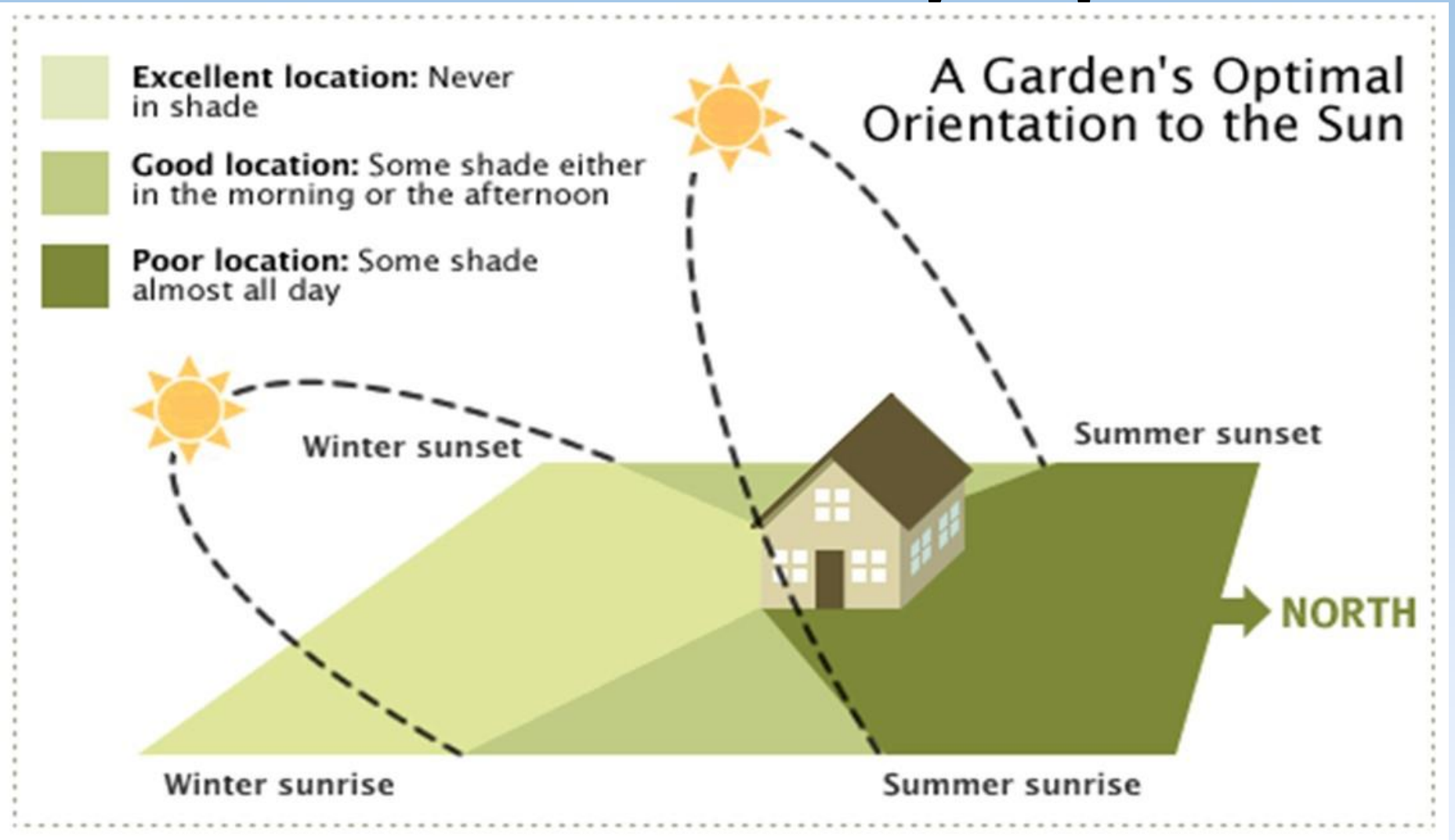
- Level ground
- 6-8 hours direct sun
- Close to water source

- Convenient to dwelling
- Southern exposure
- Protection from critters

Choose a Sunny Spot



Source: http://blog.smartgardener.com/in-the-garden/where-to-put-the-vegetable-garden

Types of Gardens

- In-Ground: Traditional
- In-Ground: Raised Beds
- Table-height beds
- Edible Landscapes
- Containers

Raised Beds

Edible Landscapes

Table Height Salad Table

Containers

The In-Ground Garden

Traditional Approach

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Raised Beds

- 2-4 feet wide
- 6-12 inches high
- Space for access
- Above grade support
  - Mounded soil
  - Wood (use untreated and known sources)
  - Stone
  - Brick
  - Recycled building material

Raised Beds - Advantages

LJEmerick

- Sun warms soil quickly in spring.
- They drain well with less soil compaction, erosion.
- They increase rooting area for shallow-rooted plants and initial root growth for deep-rooted ones
- They can provide greater yields per square foot.
- They are tidy, easier to maintain.

Raised Beds - Disadvantages

- Initial cost may be high.
- Soil may dry out in hot or dry weather.
- It may be difficult to relocate beds once filled with soil.
- Wood can decompose over the years

The Edible Landscape

Kitchen Gardeners International

Mother Earth News

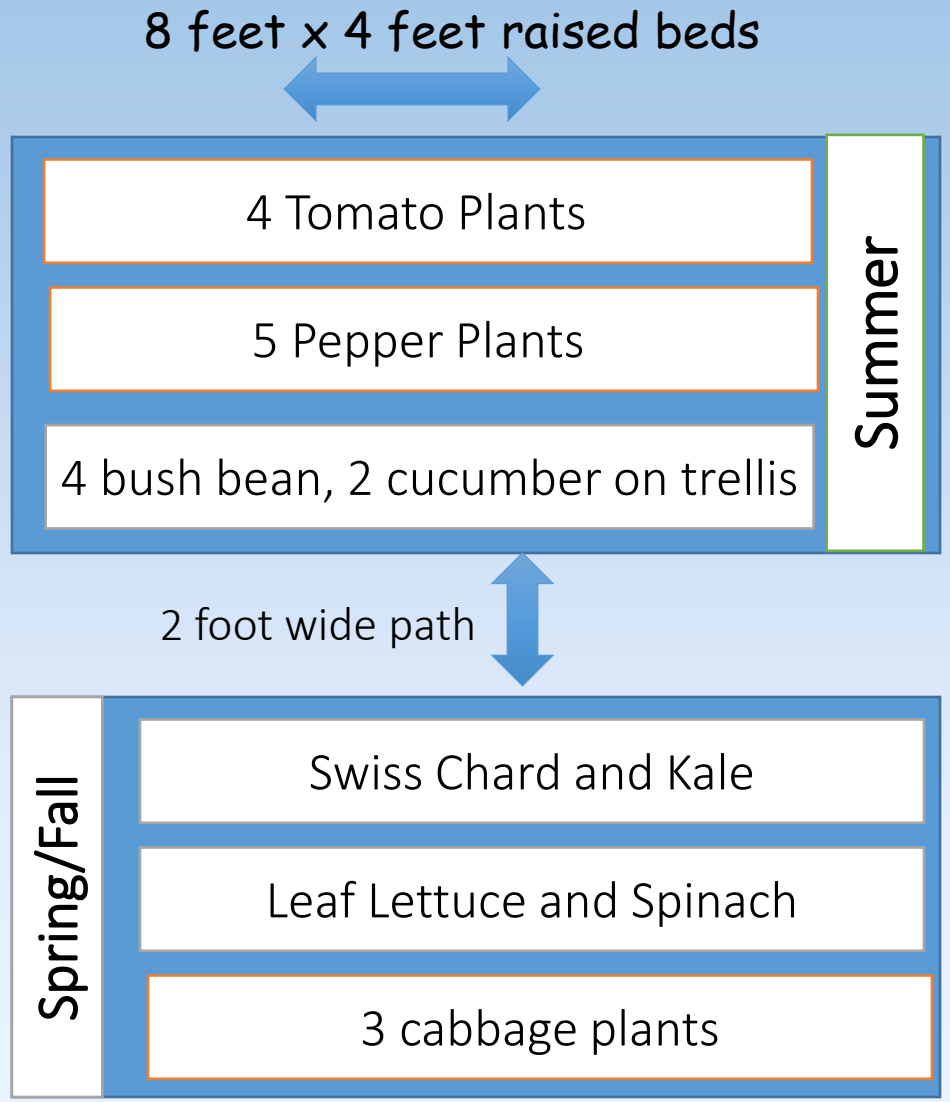
Photo: Rosalind Creasy

Vegetables can be planted in the ornamental landscape.

Garden Size

- Start small – only what you can eat
  - A good starter size is 50 – 75 sq ft
- Consider available space, time, effort.
- Pre-plan to save time and expense.

Sample 8 x 8 Foot Garden



Early Spring garden can be replaced with summer crops (e.g., squash, pumpkins) once the weather is warm.

Be sure to add nutrients when succession planting.

Growing Vegetables in Containers

What types of vegetables can I grow in containers?

- Almost any vegetable can be grown in a container, but it is important to pick the correct size!
- Lettuce, spinach, herbs need at least a 4" deep container.
- Tomatoes, peppers, eggplant, cucumbers need at least an 18" deep container.

What container should I use?

- 5-gallon plastic buckets.
- Plastic or terra cotta pots.
- Plastic storage containers.
- Grow bags.
- Self-watering containers.

Growing Vegetables in Containers

What sort of soil should I use?

- Don't use garden soil. It is too heavy and will compact in the container starving roots of oxygen.
- Do use commercial potting mix. It is light weight, high in organic matter and drains well.
- Add a slow-release fertilizer if none is included in the potting mix.

Growing Vegetables in Containers

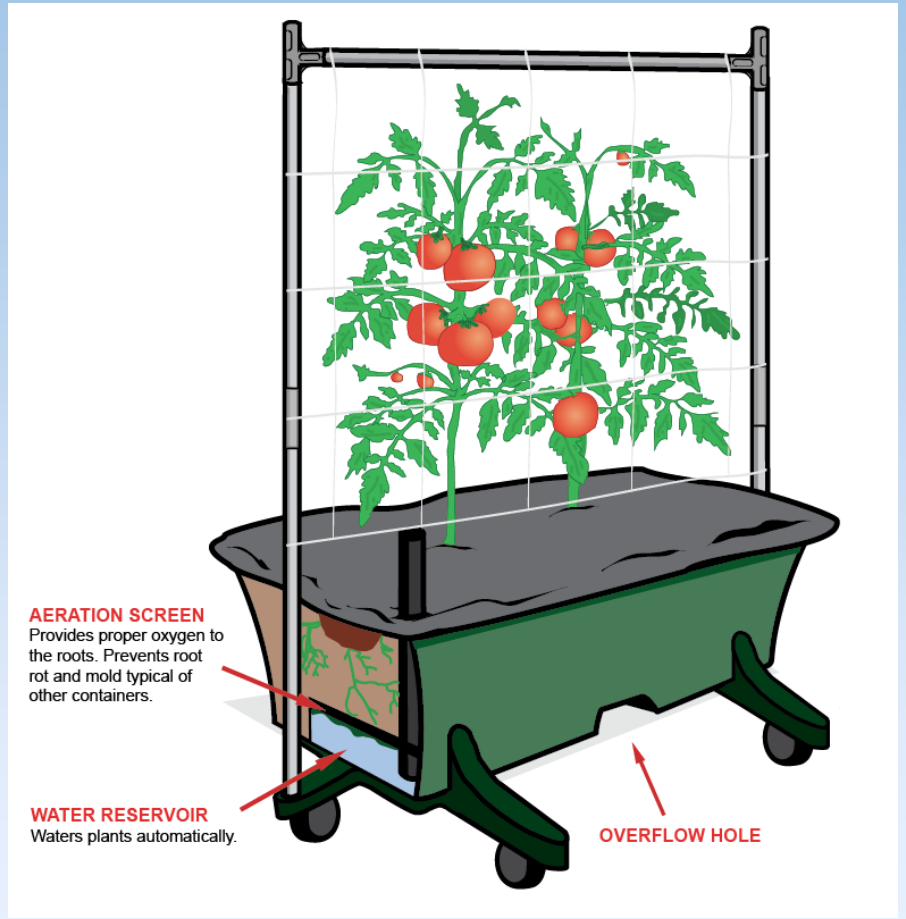
How do I care for my plants?

- Place your plants in full sun (minimum of 6 hours per day). Note: lettuce can take part shade.
- Carefully place containers - they will be heavy when full and hard to move. Some may stain deck/patio without a drip tray.
- Apply a second application of fertilizer for big, long growing plants.
- You may need to water daily as plants mature.
- Consider using a self-watering container to reduce the need to water daily.

Growing Vegetables in Containers

Self watering containers (SWC's)

- SWC is a plant pot or box that has a reservoir for water in the bottom.
- Water is wicked up into the potting mix either by a cloth wick or the potting mix itself.
- Reduces the need for daily watering.
- Bottom watering also helps to retain fertilizer and avoids overwatering.



Containers

Advantages

- Inexpensive
- Convenient
- Portable

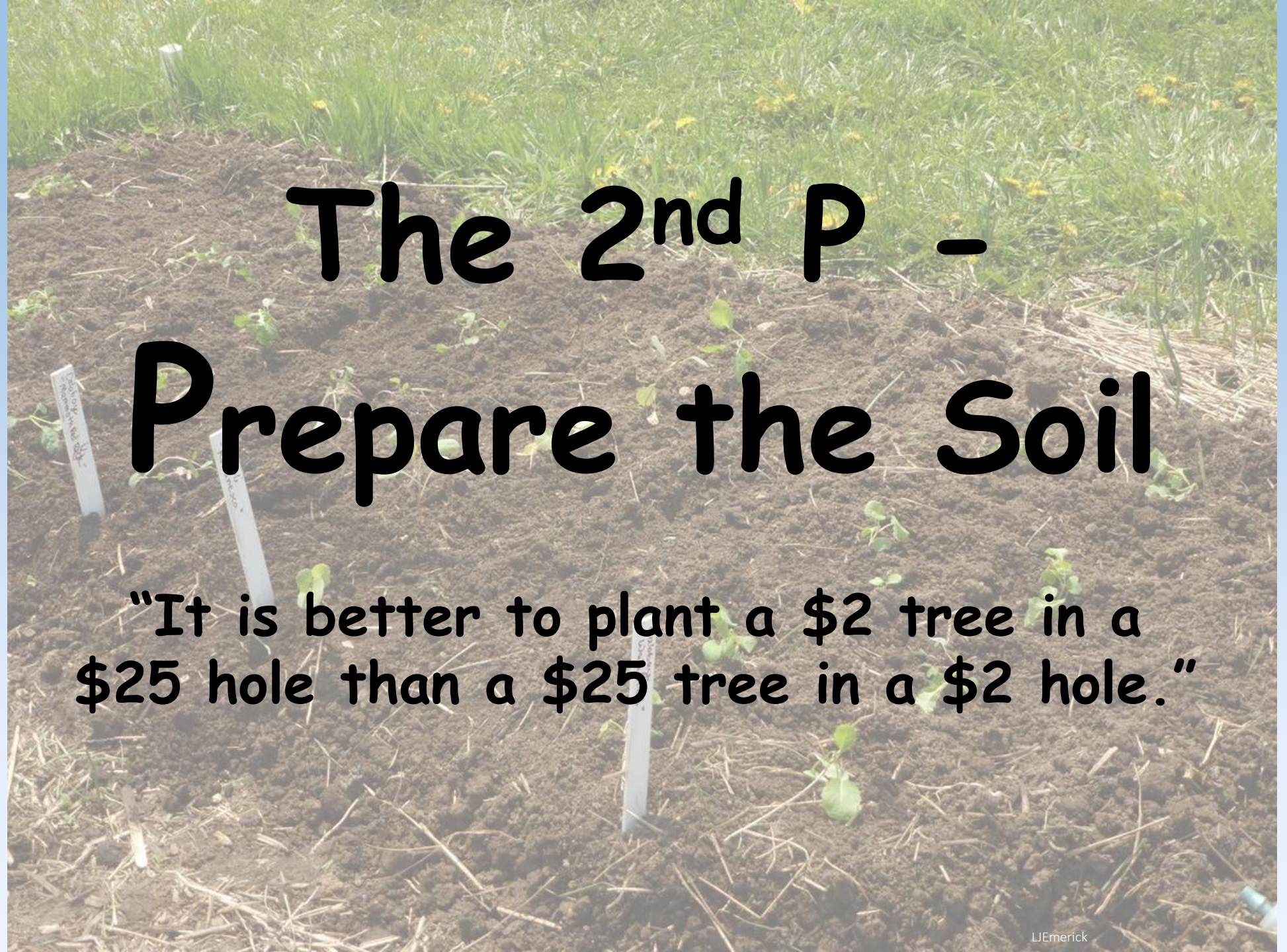
Source: extension.umd.edu/growit

Disadvantages

- Frequent watering
- Growing limits

https://youtu.be/OIKXcxzK93M

Questions?



The 2nd P - Prepare the Soil

"It is better to plant a $2 tree in a $25 hole than a $25 tree in a $2 hole."

SOIL BASICS- Dirt vs Soil

Dirt is Dead.

Dirt is made up of sand, silt, clay and may be rocky.

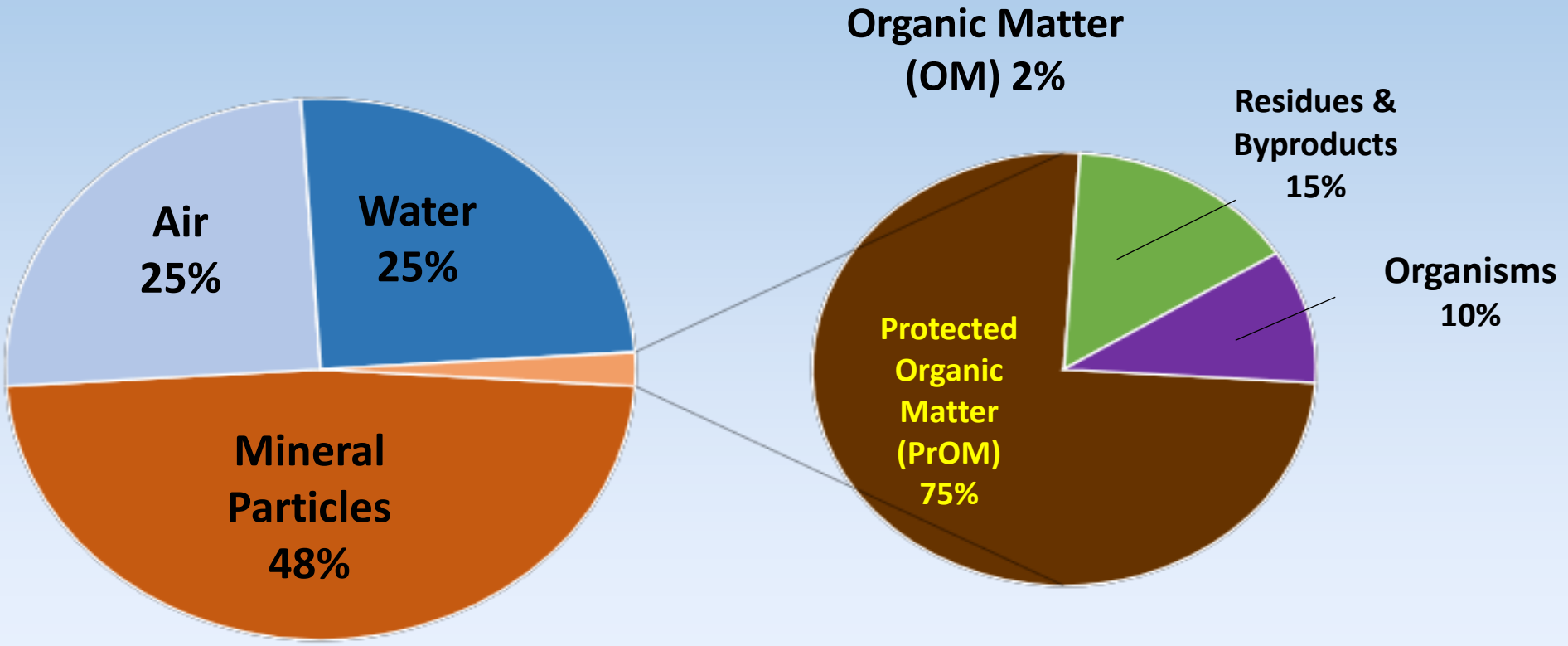
It has none of the minerals, nutrients or living organisms found in soil.

Soil is Living. It is a complete and self-sustaining ecosystem,

Soil is alive with living organisms such as worms, fungi, insects, bacterial and organic matter that supports life. The mineral components of sand, silt and clay plus organic matter make up soil. Soil also includes water and air.

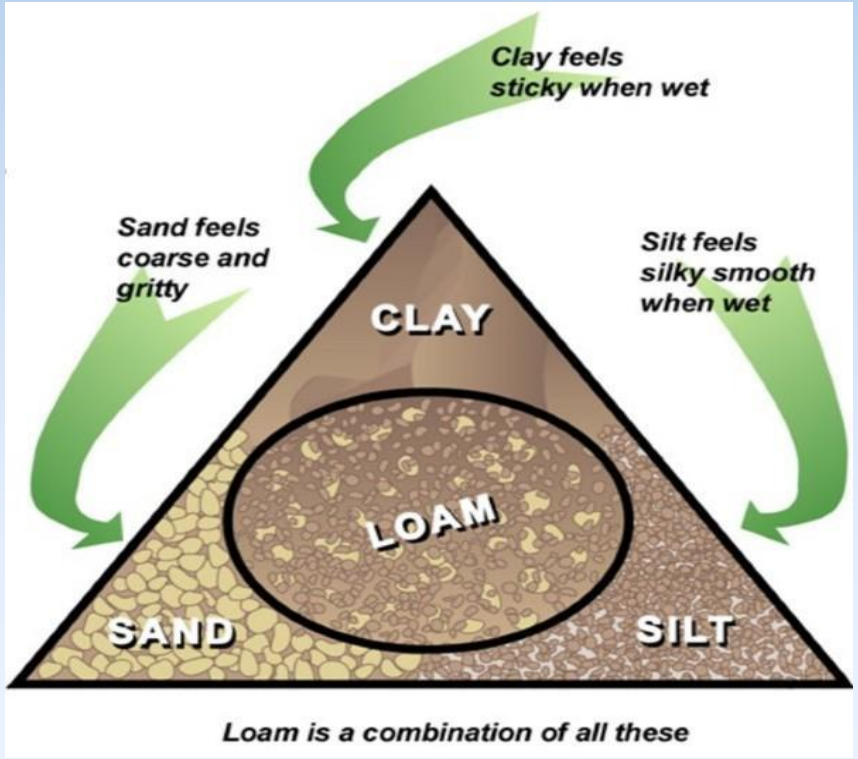
-All soil began as dirt.

Soil has 4 major parts. These parts provide soil's texture (mineral particles- clay, sand and silt) and structure (organic material).



Source: MG Training materials developed by P. Steinhilber, Ph.D. and M. Wilson, Ph.D.

Nearly all natural Maryland soil is comprised of clay, sand and silt. There are many textures and types in the state and there may be several in the same yard.



- Texture is:

- determined by the ratio of particles and doesn't change over time.

-determines how the soil feels and behaves.

- 12 soil textural classes (USDA)
- Loamy soil includes organic matter and is preferred for crops.

NOTE: Clay is important to hold and protect organic matter.

Soil Terminology

Container Soil: Self-contained product designed to provide potted plants with everything they need to grow and thrive.

Garden Soil: Topsoil that has been enriched for vegetation and plant growth.

Natural Topsoil: Top layer of the ground (2-10 inches) that can support vegetation, formed over hundreds and thousands of years by parent rock beneath it.

Commercial Topsoil: Soil manufactured by humans, not formed in nature from soils, either mined or sourced from different locations, and brought to one central topsoil manufacturing site. May not be suitable for gardens.

NOTE: NOT regulated in Maryland, if used, always test (include Lead Test) the soil prior to planting.

Healthy Garden Soil

- Medium to dark brown in color
- Fertile (capable of producing abundant vegetation)
- Friable (easily crumbly for good root growth)
- Plenty of organic matter
- Optimum pH of 6.0-6.8
- Large number of various size pore spaces to allow for free movement of water, air and plant root growth
- You can dig a hole 2-3 feet deep without too much difficulty
- Drains well/No standing water hours after a rainfall and soil particles do not move off-site during heavy rainfall

➢ Prepare the Area

- **Fall is the optimum time to prepare the area to start** a vegetable garden: **prepare** the soil, **mulch** heavily, and let it **settle** over winter.

- Spring prep is possible. Be sure soil is not too wet. Dig up a **handful of soil** from below surface and squeeze it in your fist. Then **poke it with your finger**. **If it falls apart, it's dry enough to dig.** If it makes a wet muddy ball that sticks together, wait a few more days and try again. Working with very wet soil can damage its structure and result in heavy clods that are hard to break apart.

- Tilling, especially repeated tilling, while quicker and easier, is not a recommended method.

- Vegetable beds are optimally approximately 12-18 inches deep (with garden soil, suitable for planting).

Prepare the Area (cont'd)

- For existing in-ground or raised gardens/beds
  -remove plants (shake to loosen soil, replace soil in bed) and debris

- For existing containers
  -remove old dirt, plants and debris; clean (dish soap and water, rinse well) container; replace with new soil or growing media

- New in-ground beds from turf areas
  -remove the sod, by hand, dig by hand, sheet mulching (see 3 slides to follow)

- Add soil, if needed, to provide depth of soil for crop production

NOTE: If you choose to use an **herbicide (not recommended), follow the directions**. Be sure to use a food-safe herbicide. Use herbicides only when necessary, at recommended rates and times of application, and only for those crops and uses listed on the label.

Prepare the Area (cont'd)
-Removing Sod-

- Kill or remove grass and weeds.
- Dig up the area by hand or...

...cover area with newspaper
or cardboard/newspaper plus leaves or
compost (sheet mulching).

Prepare the Area (cont'd)
-Removing Sod-

1st – Slice off sod.

2nd - Turn soil. (sideways)

3rd – Loosen subsoil.

4th – Add organic matter.

Prepare the Area (cont'd)
-Sheet Mulch-

- Wet thoroughly.
- Add a thick layer of organic matter.
- Avoid wood or bark mulches.

- Cut growing matter short.
- Remove large plants or deep rooted weeds.
- Lay out overlapping sheets of cardboard (best in Fall) or 4-6 sheets of newspaper.

➢ Test the Soil

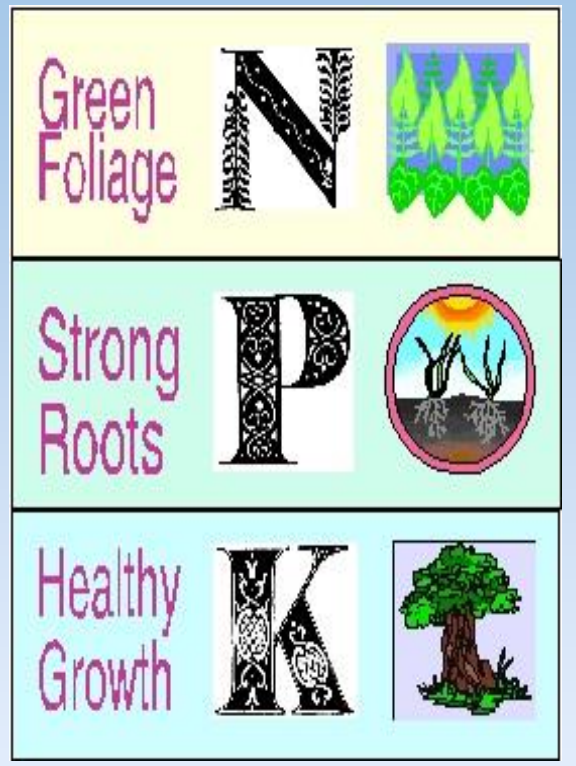
What is a Soil Test? (See tri-fold brochure)

- Chemical analysis estimating a soil's ability to supply nutrients.
- Provides baseline data on and interpretations of soil pH, nutrient levels, and organic matter content
- Includes levels of soil's 3 primary macronutrients, nitrogen (N), phosphorus (P) and potassium, (K) and trace elements such as calcium (Ca) and magnesium (Mg)
- Provides recommendations for adjusting soil pH and fertilizing

NOTE: Test vegetable garden soil, regardless of location, for Lead (Pb), desired levels are less than 400ppm in bare soils. (CDC has guidelines.)

Benefits of soil testing

- Provides guidance for the application of the proper balance of plant nutrients.
- Take advantage of nutrients already in the soil.
- Identifies nutrients that are lacking in the soil.
- Reduces fertilizer applications by applying only what is needed.
- Can adjust soil pH to an optimum level.
- Reduces chances of excess nutrients (nitrogen and phosphorus) getting into water sources.
- Saves money
- Essential for soil health



Test the Soil cont'd

When should the soil be tested?

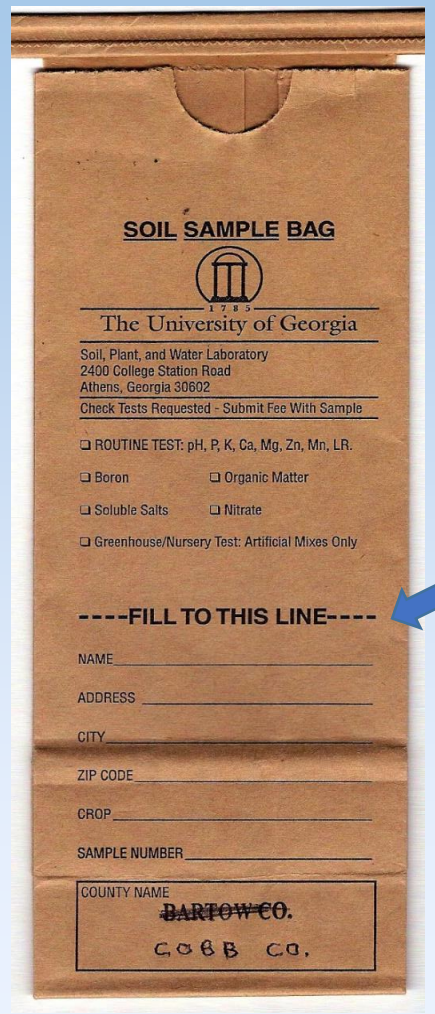
- If in-ground, at least every 3 years or new area.
- Purchased/bagged soils shouldn't need testing, if from reliable sources
- Bulk topsoil should be tested

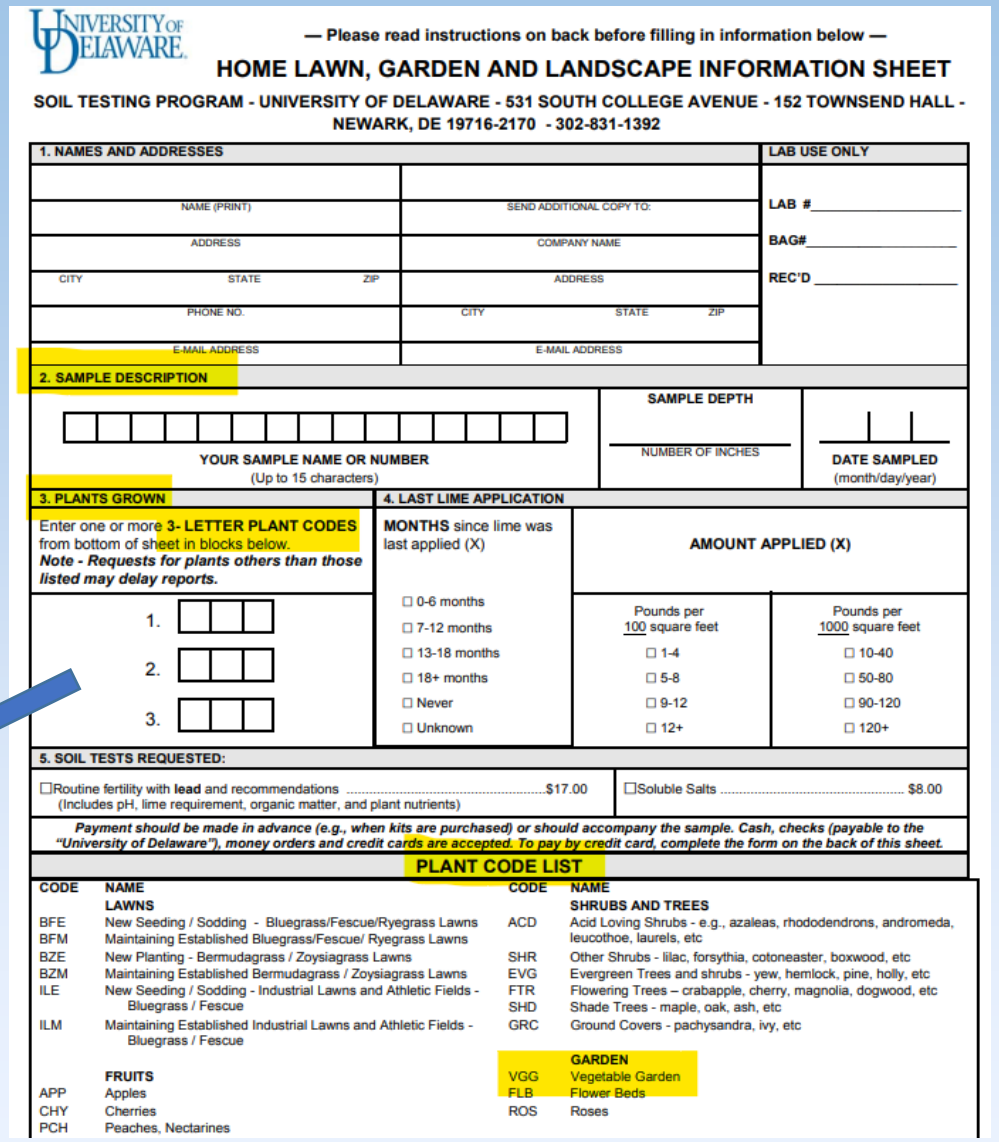
Who should test the soil? (Which lab?)

- Check lab result samples to select a lab that best fits
- They vary! See list in resources from UMD Extension
- DIY test kits are not recommended- test interpretation can be complicated

Test the Soil cont'd- Getting started

- Read all the instructions
- Collect the sample (see details on slide #38, to follow)
- Specify on the form/sample bag the area is for a **vegetable** garden
- Mark the form with identifying information and/or an ID number for each sample, as instructed
- Verify costs (include $)for Basic Test plus extra cost for Lead testing, as instructed





-Collecting the Sample-

- Use a trowel, spade, shovel or another tool to take 11-13 slices across the entire span of the space, place in a clean pail
- Sample to a depth of at least 6 inches
- Shake off the grass, excess soil, branches, and other debris.
- Mix the soil into 1 composite sample
- Spread out on dry, clean newspaper in a warm room (do not heat) to dry overnight. (More time needed, if still wet)
- If the areas within the space vary in soil type, previous fertilizer, or cropping history, sample each area separately, bag, and label accordingly.
- Put 1 cup of the dry representative soil mixture in a clean Ziplock bag or collection bag
- Place the collection bag in a padded mailer or small box.
- Have the soil weighed and shipped as a parcel/package, not shipped as a letter.

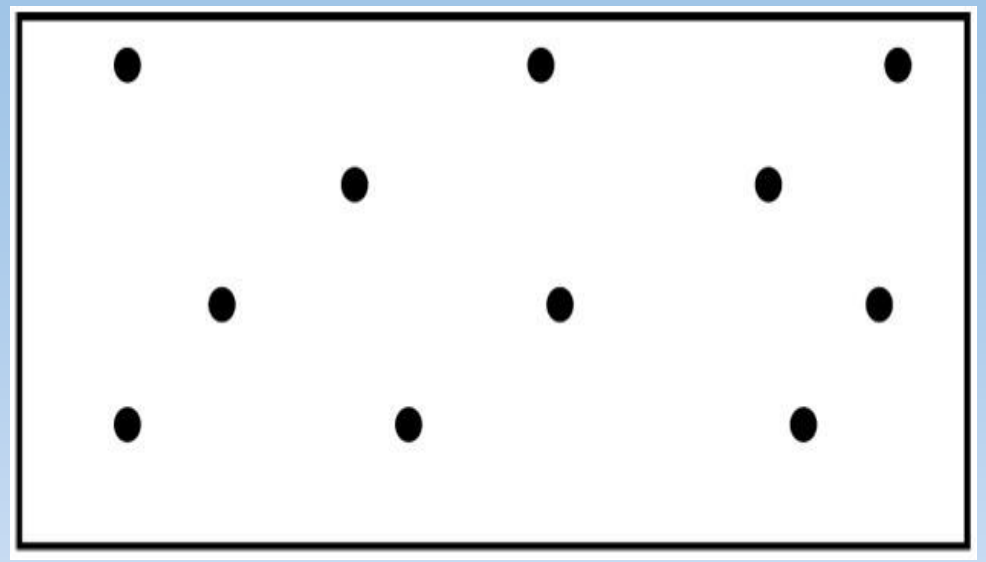


Photo Penn State Univ.

Test the Soil cont'd - Report Information

1. Nutrient Data (Examples)

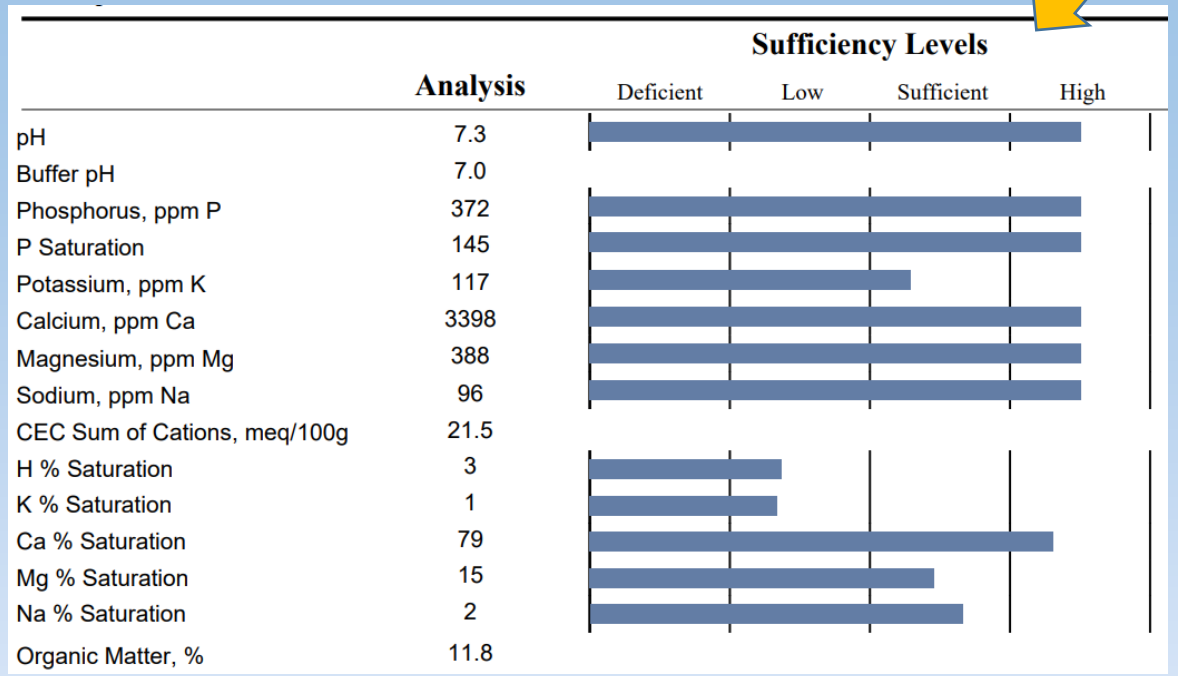
	Analysis
pH	7.3
Buffer pH	7.0
Phosphorus, ppm P	372
P Saturation	145
Potassium, ppm K	117
Calcium, ppm Ca	3398
Magnesium, ppm Mg	388
Sodium, ppm Na	96
CEC Sum of Cations, meq/100g	21.5
H % Saturation	3
K % Saturation	1
Ca % Saturation	79
Mg % Saturation	15
Na % Saturation	2
Organic Matter, %	11.8
Est Organic Carbon, % C	6.84

Analysis		*Result*	*Optimal*	*Analysis*		*Result*	*Optimal*
Soil pH		5.6	6.0-6.8	Sulfur	m3-ppm	18	20-40
Buffer pH		6.8		Boron	m3-ppm	0.8	0.9-1.7
Organic Matter	%	3.3		Copper	m3-ppm	4.7	Varies
CEC		7.4		Iron	m3-ppm	150	9-40
K Saturation	%	3.2	2.0-4.0	Manganese	m3-ppm	21	Varies
Mg Saturation	%	13.8	10-20	Zinc	m3-ppm	5.7	3.9-10.9
Ca Saturation	%	49.5	50-70	Sodium	m3-ppm	21	
Na Saturation	%	1.2	0-10	Soluble Salts	mmhos/cm	0.15	No Data
K/Mg Ratio		0.8		Nitrate-N	ppm	95	
Ca/Mg Ratio		7.0					
Phosphorus	m3-ppm	34	50-80				
Potassium	m3-ppm	109	130-220				
Magnesium	m3-ppm	140	140-280				
Calcium	m3-ppm	982	900-1500				

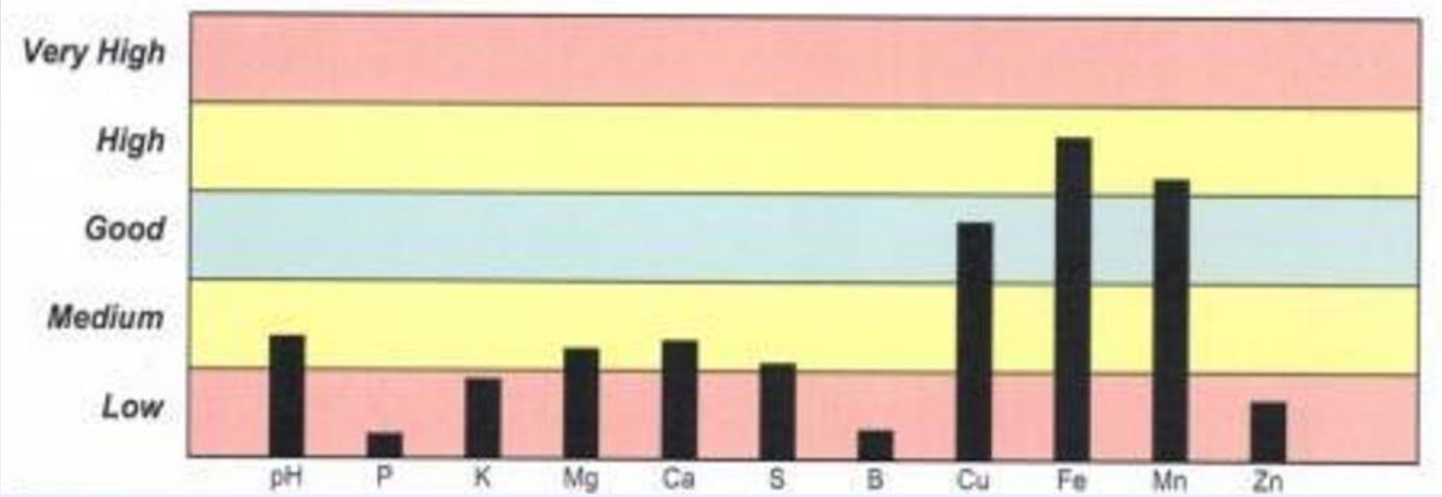
Test the Soil cont'd - Report Information

2. Interpretation (Examples)

Graph B



Graph A



What macronutrients are needed In Graph A?

What is the most important value to be corrected in Graph B?

Test the Soil cont'd - Report Information
3. Recommendations (Examples)

Recommendations

University Extension
University of Missouri
Columbia

Soil Test Report
For Lawns and Gardens

----------MU Laboratories----------

23 Mumford Hall
Columbia, MO 65211
(573) 882-0623

or

P.O. Box 160
Portageville, MO
(573) 379-5431

Serial No.	County	Region
H46109H-1	Boone	
Submitted	**Processed**	
3/27/2018	3/29/2018	

http://www.soiltest.psu.missouri.edu/

Sample ID: Home garden 1

Lab No: CO185997

This report is for:
Lawn Garden
1000 Univ. Ave
Columbia, MO 65201

Last Limed: unknown

SOIL TEST RESULTS			RATING
			Very low / Low / Medium / High / Very high / Excess
pHs	5.5		**********
Phosphorus (P)	7	lbs/a	***
Potassium (K)	191	lbs/a	**********
Calcium (Ca)	5253	lbs/a	**********
Magnesium (Mg)	495	lbs/a	**********
Organic Matter:	2.6 %		**Neutr. Acidity:** 2.0 meq/100 g — **CEC:** 16.0 meq/100g

Fertilizer & Limestone Recommendations (lbs/1000 sq ft)

Crop	Nitrogen(N)	Phosphorus(P_2O_5)	Potash (K_2O)	Zinc(Zn)	Sulfur(S)	LIME
1 vegetables	0.5	4.0	0.5			100
2 blueberries	1.0	4.0	1.0		50	0

Organic Carbon, % C 7.63

- Split apply Nitrogen in the fall (Sept) and Spring (March) at rates less than 1lb/1,000 square feet per application. Lime applications should not exceed 50 lbs/1,000 square feet per application.

Recommendations

In Actual Pounds of Plant Nutrients per 1000 sq. ft.

Crop : (AgroLab) Garden, Unit/A — **Nitrogen Credit :** 0

Sub-Soils : — **Yield Goal :** 1

N	P2O5	K2O	S	Zn	Mg	Fe	Mn	Cu	B	Lime, lbs/1000 s.f.
2.9	0	0			0					0.00

➢ Improving the Soil

Based upon the recommendations from the soil test…materials applied to or mixed into the topsoil to improve soil properties and growth, most supply some plant nutrients

- **Use Organic Materials-** Materials derived directly from plants or animals that are alive or dead or in some stage of decomposition and minerals. Added to top 6 inches of the topsoil. Will impact soil structure (how soil forms air and water spaces)

- **Use Fertilizer Materials-** Inorganic (includes synthetic and chemical components, guaranteed nutrient analysis) feeds the plant or Organic (minimally processed from plant or animal sourced end products) feeds the soil.

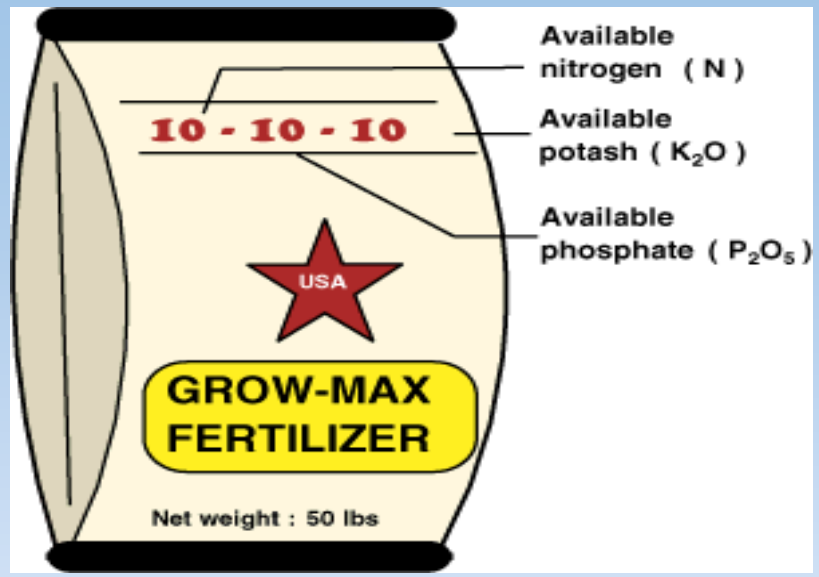
- Stick to the four Rs: Use the **right amount** of the **right fertilizer** in the **right place** at the **right time**.

Improving the Soil- Organic Matter (OM)

- Know the source – OK to use cow, horse, goat, llama and chicken manure, composted at least 6 months. Never use human or pig or pet manure.
- OM is wood by products, compost (decomposed leaves, vegetable and other organic kitchen scrapes), aged animal manures, mulches or peat moss
- At least 2% (target goal 5-10%)
- Regular additions will improve soil structure over time and create a reservoir of slow-release nutrients.
- Large amounts of organic matter may be needed for several years.

Improving the Soil- Use Fertilizers

- Organic and Inorganic Fertilizers provide necessary nutrients
- May be difficult to determine how much Organic Fertilizer to use Examples- Compost, Bone Meal
- A bag labelled 10-10-10 shows weight percent of available nitrogen (N), phosphate pentoxide(P_2O_5), and potash (K_2O, potassium oxide) as 10% each.
- These macronutrients are expressed in the order N-P_2O_5-K_2O.
- Excess application of any fertilizers can burn plant leaves and roots, reduce fruiting, invite insect pests, and pollute waterways.



Example **50-lb bag of 10-10-10 fertilizer**:

50 x 0.10 = 5 lbs N

50 x 0.10 = 5 lbs P

50 x 0.10 = 5 lbs K

Total = 15 lbs nutrients

The remaining weight is filler.

From: NC Department of Agriculture

Improving the Soil- Example Products

- Can have multiple functions: change soil pH, supply nutrients, improve physical properties

- Type to use dependent on purpose and specific for the type of soil

EXAMPLES:

- **Limestone**- Neutralizes soil acidity, raises soil pH
- **Urea**- Provides only nitrogen, lowers soil pH
- **Sulfur**- Aids in nitrogen metabolism, lowers soil pH
- **Bone Meal-** Provides calcium and phosphorus, improves tomatoes/blooms, raises soil pH
- **Compost**- Adds nutrients, improves soil density
- **Manure**- Aids in water retention, limited amount of nutrients

Questions?

BREAK

10 MIN.

The 3rd P – Plant Your Garden

(Or "What do you like to eat?")

Popular Crops for Beginners

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- Herbs
- Lettuces
- Leafy greens
- Bush beans
- Peppers
- Tomatoes
- Cucumber
- Summer squash

The Scoop on Tomatoes

The most popular home garden crop

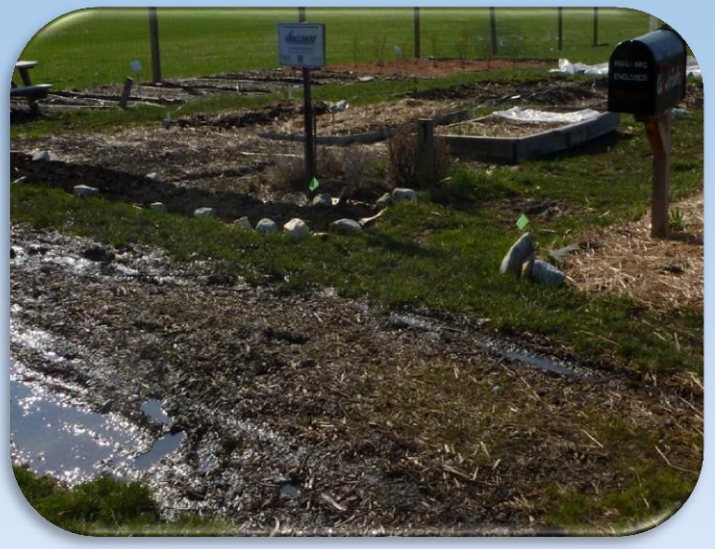
- Hybrid vs. heirloom - What is the difference?
- Determinate vs. indeterminate

- Plant tomatoes deep – up to their top leaves – to encourage root development
- Provide support (trellis or stake) if possible

LJEmerick

When to Plant

- Seed packet information
- Planting calendar
- Air/Soil Temperature
- Frost tolerance
- Soil moisture



LJEmerick

Cool Season, Warm Season

- **Cool season crops** (spinach, lettuce, broccoli) as soon as ground can be worked. These can be Fall crops too.
- Beets, carrots, chard, kale a little later - can handle light frost.
- **Warm season crops** (beans, tomato, melon, eggplant, pepper) need warm days and nights to thrive.
- Summer squash, beans, cucumber can be planted twice (succession planting).

Seed or Transplant…?

Seeds (Direct)

- Check the seed packet for directions.
- Look for time to germinate or harvest.
- Commonly direct seeded:
  - Leafy greens: lettuce, spinach, chard, Asian greens
  - Legumes: peas, beans
  - Root vegetables: beets, radish, turnips, carrots
  - Optional: Cucumbers, summer squash, okra

Transplants

- More costly but sometimes more convenient.
- Preferable for plants with a longer time to harvest.
- Commonly transplanted:
  - Fruiting vegetables: tomatoes, eggplant, peppers,
  - Brassicas: cabbage, broccoli, cauliflower, Brussel sprouts, collards

Hardening Off your Transplants

- Hardening off is the process of exposing seedlings gradually to outdoor conditions
- Begin hardening transplants 1-2 weeks prior to setting out plants in your garden.
- An easy way to harden seedlings is to place them outside in a protected spot on warm days, bringing them in at night

Do not put tender seedlings outdoors on windy days or when temperatures are below 45° F

Planting Seeds

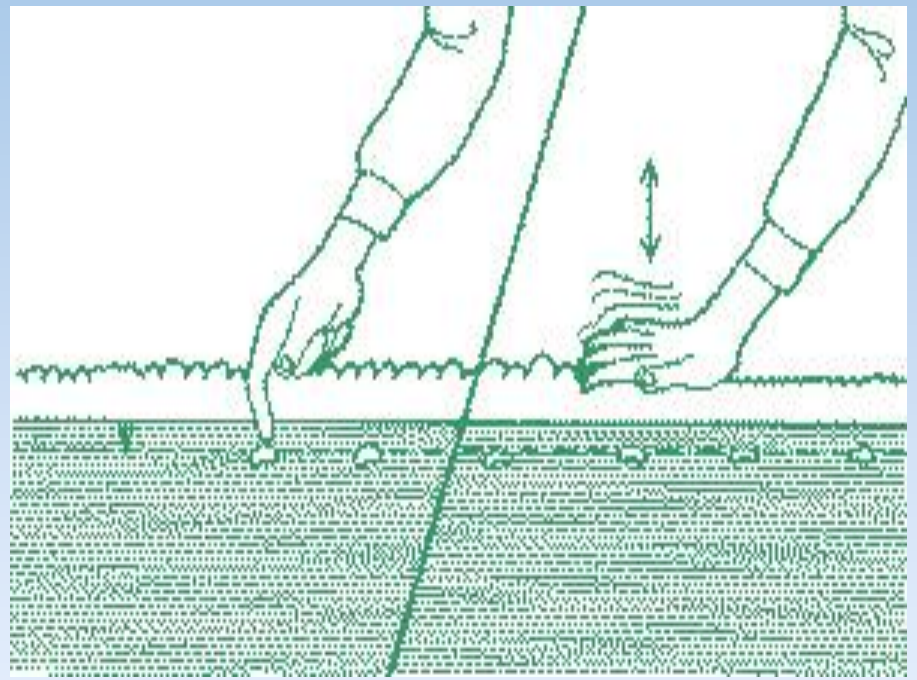
- Rake the soil smooth.
- Plant seeds at recommended depth, spacing (check seed packet or catalog).

- Make a shallow furrow to plant a single row…

OR

- Sprinkle seeds over a wide row or bed (broadcasting).

Planting Seeds



Cornell University

- Don't plant too deep!
- Lightly tamp down the soil for good seed-to-soil contact.
- Water in well, using gentle sprinkling nozzle or watering can.

Spacing Seeds, Seedlings

- Check seed packet for spacing recommendations.
- Small seeds are hard to plant at correct distance. Thin seedlings as they grow.
- Learn to love thinning!
- Greens, lettuce seedlings are delicious in salads.

Correct spacing for large onions

Overcrowded okra

Planting Transplants

- Plant at recommended depth, spacing.
- Plant at same soil level as in pack or pot. (*Exception: Tomatoes can be planted deeper or horizontally!*)
- Water immediately, keep soil moist until new growth appears.
- Fertilize <u>after</u> new growth appears.

Plant Supports

- Tomatoes, peppers, eggplants need staking or cages for support.
- Use wire mesh for cucumbers, squashes.
- As plants grow, tie to supports, tuck in, or help them twine.

- Provide a string tower or bamboo "teepee" for snap peas and pole beans.

Place the supports before or soon after planting!

https://www.youtube.com/watch?v=LIzM9MZGYQI

The 4th P – Produce and Maintain

Fertilizing Your Garden during the Growing Season

- Read and follow fertilizer labels.
- When appropriate, use slow-release fertilizers and substitute local organic fertilizers and soil amendments for synthetic fertilizers.
- The amount of fertilizer needed by plants decreases as the organic matter of the soil increases

Remember!

Excess application of any fertilizers can burn plant leaves and roots, reduce fruiting, invite insect pests, and pollute waterways.

Photo: Cornell.edu

Watering -When to water

- Vegetable plants need, on average, 1 inch of water per week from rain or irrigation.
- Soil should be moist below the surface, "like a damp sponge."
- Monitor seeds and young seedlings daily. Monitor established plants every 2 days.
- Add mulch between the rows and you'll help stretch the time between waterings.
- Battery-operated hose timers are readily available and can be used to water the garden regularly or during periods of absence

Watering – Best practices

- Have an easily accessible water source
- <u>Water the roots, not the leaves</u>. Wet leaves foster disease
- Use drip irrigation or soaker hoses to save time and water.
- It's best to irrigate in the mornings and to directly water the plants' root zones. This limits the amount of water lost to evaporation

Weed Management

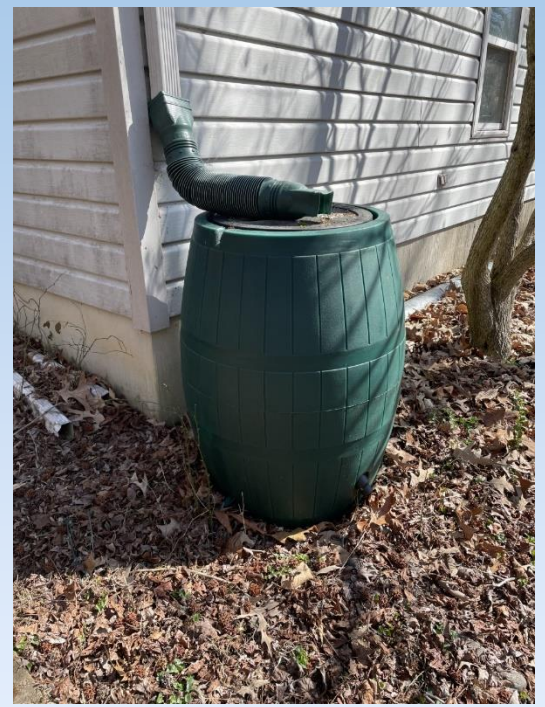
"Weeds" are defined as plants growing where they are not wanted.
Weeds attract pests and rob plants of moisture and nutrients.

Recommended control methods:

- Hand-pull when soil is moist.
- Use sharp hoe to chop off above ground portion.
- Lay organic mulch to prevent growth (avoid wood or bark).
- Use sturdy landscaping fabric to block weeds (can be reused)

What about Rain Barrels?

- Collecting water in rain barrels is a good way to reduce run-off into streets and waterways.
- BUT Water from rain barrels is not drinkable (non-potable) and generally should not be used to irrigate or wash edible plants.
- Rain barrels linked to roof downspouts may contain biological and chemical contaminants that can be dangerous to ingest.
- Use water from rain barrels for irrigating ornamental plants.



Source Rain barrels in the home landscape | UMN Extension

Garden Pests

- Monitor your garden often.
- Identify the pest. (Resource List handout)
- Determine extent of damage.
- Hand-pick (caterpillars), wash off (aphids) if possible.
- Try to attract natural predators (wasps, lady bugs, toads, birds).

The use of chemicals should always be your last resort. Try organic pesticides first.

Pest Management: Bugs and Birds

- Light weight, translucent row covers deter birds. Do NOT use netting, it kills snakes.
- PVC hoops and/or floating row covers exclude both insects and wildlife.
- Remove row covers for crops that require pollination (e.g. cucumbers, squash) once the flowers bloom.
- Consider Parthenocarpic (Don't need pollination) varieties if insect pressure is severe

Source: https://ag.umass.edu/home-lawn-garden/fact-sheets/wildlife-excluding-repelling-problem-wildlife-from-garden

Fencing out wildlife

- Proper fencing provides the most reliable way to exclude the larger mammals from the garden.
- Choose the type of fencing most suitable for the animals that are known to be a nuisance in your area -- Deer, rabbits, woodchucks
- Move nearby resources that attract wildlife (garbage cans, compost bins) away from the garden

Source: https://ag.umass.edu/home-lawn-garden/fact-sheets/wildlife-excluding-repelling-problem-wildlife-from-garden

https://youtu.be/NAvRY-AQWOQ

Questions?

Resources

- Charles County Master Gardener's Grow It Eat It webpage.
- Growing Vegetables in Containers | University of Maryland Extension
- Salad or table boxes
- How to Start a Vegetable Garden | University of Maryland Extension (umd.edu)
- Garden Fertilizer Basics | University of Maryland Extension (umd.edu)
- Starting a Vegetable Garden
- Vegetable Planting Calendar | University of Maryland Extension (umd.edu)
- 2023 Charles County Rain Barrel Workshops | University of Maryland Extension (umd.edu)

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Resources

Preparing the Soil-

- https://extension.umd.edu/resource/soil-basics
- Soil, Compost, and Fertilizer for the Home Garden | University of Maryland Extension (umd.edu)
- https://hort.extension.wisc.edu/articles/safely-using-manure-garden/
- https://agsci.psu.edu/aasl/soil-testing/fertility

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UME Resources

UNIVERSITY OF MARYLAND EXTENSION | HOME & GARDEN INFORMATION CENTER

go.umd.edu/hgic

ASK EXTENSION
SEND YOUR GARDENING QUESTIONS

go.umd.edu/askextension

MARYLAND GROWS BLOG

marylandgrows.umd.edu

UNIVERSITY OF MARYLAND EXTENSION | MASTER GARDENER

go.umd.edu/mg

LOCAL PROGRAMS

go.umd.edu/mglocalprograms

MASTER GARDENER HANDBOOK

go.umd.edu/mghandbook

UNIVERSITY OF MARYLAND EXTENSION | GROW IT · EAT IT
A MASTER GARDENER PROGRAM

go.umd.edu/giei

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UNIVERSITY OF MARYLAND EXTENSION | ASK A MASTER GARDENER PLANT CLINIC
A MASTER GARDENER PROGRAM

UNIVERSITY OF MARYLAND EXTENSION | POLLINATORS
A MASTER GARDENER PROGRAM

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A MASTER GARDENER PROGRAM

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A big Thank-You to the Baltimore County Master Gardeners Grow It Eat It team!

This presentation is based on one developed by the Baltimore County Master Gardeners Grow It Eat It team and presented by Tom Potyraj. On YouTube see Starting a Vegetable Garden!

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