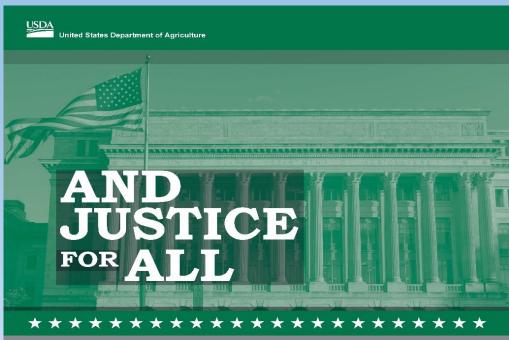






A MASTER GARDENER PROGRAM

University programs, activities, and facilities are available to all without regard to race, color, sex, gender identity or expression, sexual orientation, marital status, age, national origin, political affiliation, physical or mental disability, religion, protected veteran status, genetic information, personal appearance, or any other legally protected class.



n accordance with Federal law and U.S. Department of Agriculture (USDA) civil rights regulations and policies, this institution is prohibited from discriminating on the basis of race, color, national origin, sex, age, disability, and reprisal or retaliation for prior civil rights activity. (Not all prohibited bases apply to all programs)

Program information may be made available in languages other than English. Persons with disabilities who require alternative means of communication for program information (e.g., Braille, large print, audiotape, and American Sign Language) should contact the responsible State or local Agency that administers the program or USDA's TARGET Center at (202) 720-2600 (voice and TTY) or contact USDA through the Federal Relay Service at (800) 877-8339.

To file a program discrimination complaint, a complainant should complete a Form AD-3027, USDA Program Discrimination Complaint Form, which can be obtained online, at https://www.usda.gov/sites/default/files/documents/usda-program-discrimination-complaint-form.pdf, from any USDA office, by calling (866) 632-9992, or by writing a letter addressed to USDA. The letter must contain the complainant's name, address, telephone number, and a written description of the alleged discriminatory action in sufficient detail to inform the Assistant Secretary for Civil Rights (ASCR) about the nature and date of an alleged civil rights violation. The completed AD-3027 form or letter must be submitted to USDA by:

nail:

U.S. Department of Agriculture
Office of the Assistant Secretary for Civil Rights
1400 Independence Avenue, SW
Washington, D.C. 20250-9410; or

fax:

(833) 256-1665 or (202) 690-7442;

email

program.intake@usda.gov.

This institution is an equal opportunity provider.

onforme a la ley federal y las politicas y regulaciones de derechos civiles del Departamento de Agricultura de los Estados Unidos (USDA), esta institución tiene prohibido discrimiar por motivos de raza, color, origen nacional, sexo, edad, discapacidad, venganza o represalia por actividades realizadas en el pasado relacionadas con los derechos civiles (no todos los programas).

La información del programa puede estar disponible en otros idiomas además del Inglés. Las personas con discapacidades que requieran medios de comunicación alternativos para obtener información sobre el programa (por ejemplo, Braille, letra agrandada, grabación de audio y lenguaje de señas americano) deben comunicarse con la agencia estatal o local responsable que administra el programa o con el TARGET Center del USDA al (202) 720-2600 (voz y TTY) o comunicarse con el USDA a través del Servicio Federal de Transmisión de Información al (800) 877-8339.

Para presentar una queja por discriminación en el programa, el reclamante debe completar un formulario AD-3027, Formulario de queja por discriminación del programa del USDA, que se puede obtener en línea, en

www. usda.gov/sites/default/files/documents/usda-programdiscrimination-complaint-form.pdf. en cualquier oficina del USDA. Ilamando al (686) 632-9992, o escribiendo una carta dirigida al USDA. La carta debe contener el nombre, la dirección y el número de teléfono del reclamante, y una descripción escrita de la supuesta acción

discriminatoria con suficiente detalle para informar al Subsecretario de Derechos Civiles (ASCR, por sus siglas en inglés) sobre la naturaleza y la fecha de la presunta violación de los derechos civiles. La carta o el formulario AD-3027 completado debe enviarse al USDA por medio de:

correo postal:

U.S. Department of Agriculture
Office of the Assistant Secretary for Civil Rights
1400 Independence Avenue, SW
Washington, D.C. 20250-9410; o'

fay:

(833) 256-1665 o' (202) 690-7442;

correo electrónico: program.intake@usda.gov.

Esta institución ofrece igualdad de oportunidades.

Affiche complementario al Formulario AD-475-A / Revisado Septiembre 2019

University programs, activities, and facilities are available to all without regard to race, color, sex, gender identity or expression, sexual orientation, marital status, age, national origin, political affiliation, physical or mental disability, religion, protected veteran status, genetic information, personal appearance, or any other legally protected class.

















Charles County Master Gardeners
GROW IT EAT IT Education Project Team;

Tina Bailem
Michelle Chenault
Beth Grem
Lori Guido
Kathy Jenkins
Meg MacDonald
Terry Thir

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.

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...)



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



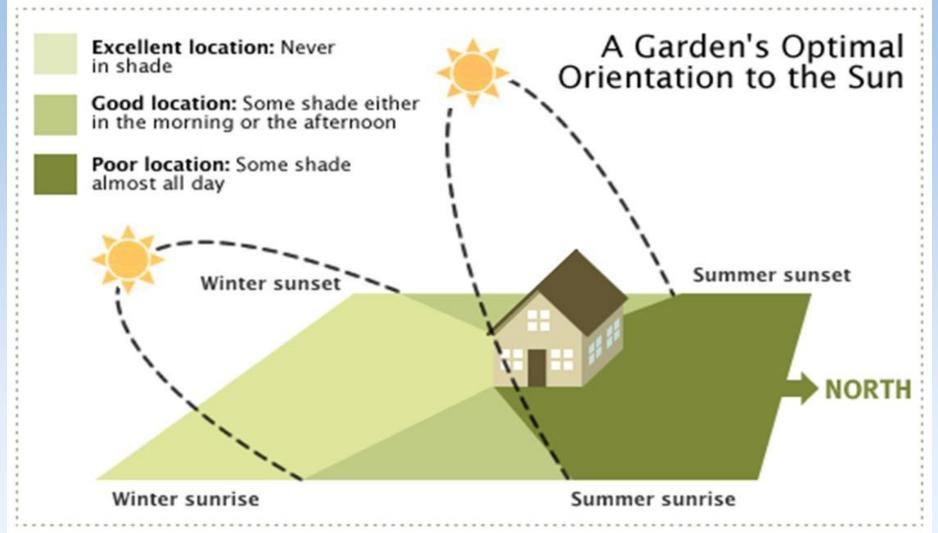


- Convenient to dwelling
- Southern exposure
- Protection from critters





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



Edible Landscapes



Table Height Salad Table



Raised Beds



Containers



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

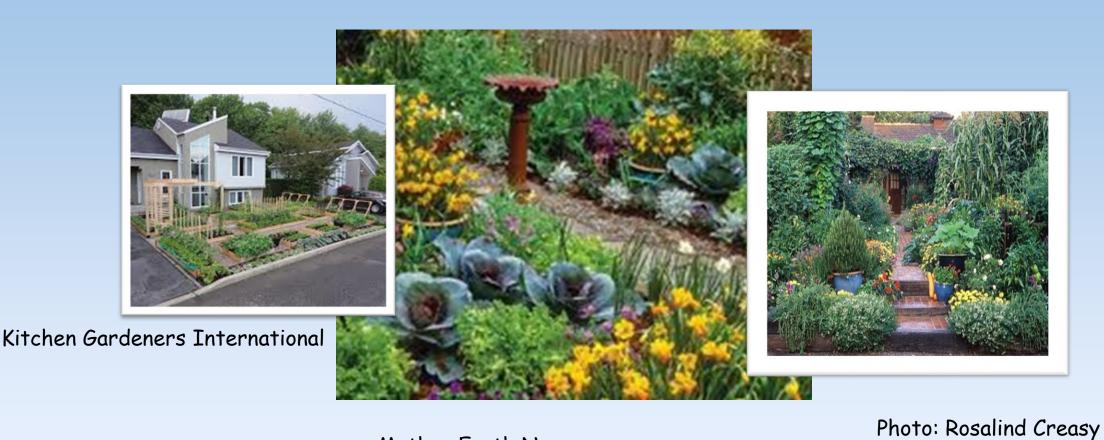
- · Sun warms soil quickly in spring.
- They drain well with less soil compaction, erosion.
- They increase rooting area for shallowrooted plants and initial root growth for deep-rooted ones
- They can provide greater yields per square foot.
- · They are tidy, easier to maintain.

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



Mother Earth News

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

8 feet x 4 feet raised beds

3 Tomato Plants Summer 14 bush bean Plants 6 Pepper Plants 3 foot wide path Swiss Chard and Kale Spring/Fall Leaf Lettuce and Spinach

7 cabbage plants



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

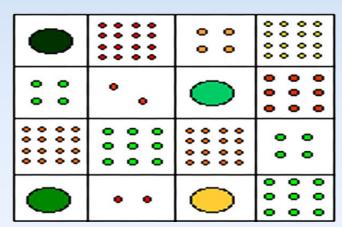
Be sure to add nutrients when succession planting.

Square Foot Gardening

- Square Foot Gardeners plant intensively in blocks rather than rows. Usually in 4' X 4' or 4' X 8' raised beds.
- Seeds are spaced within a square foot area depending on their mature size.
- Once one crop is harvested, another is planted.
- Good choice for small crops for those with limited space (lettuce, radish, beets, carrots, etc.)
- Not optimal for larger crops (tomatoes, squash, broccoli, etc.)



By Thomask0 - Own work, CC BY-SA 4.0, https://commons.wikimedia.org/w/index.php?curid=38129441



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.



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.



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.



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

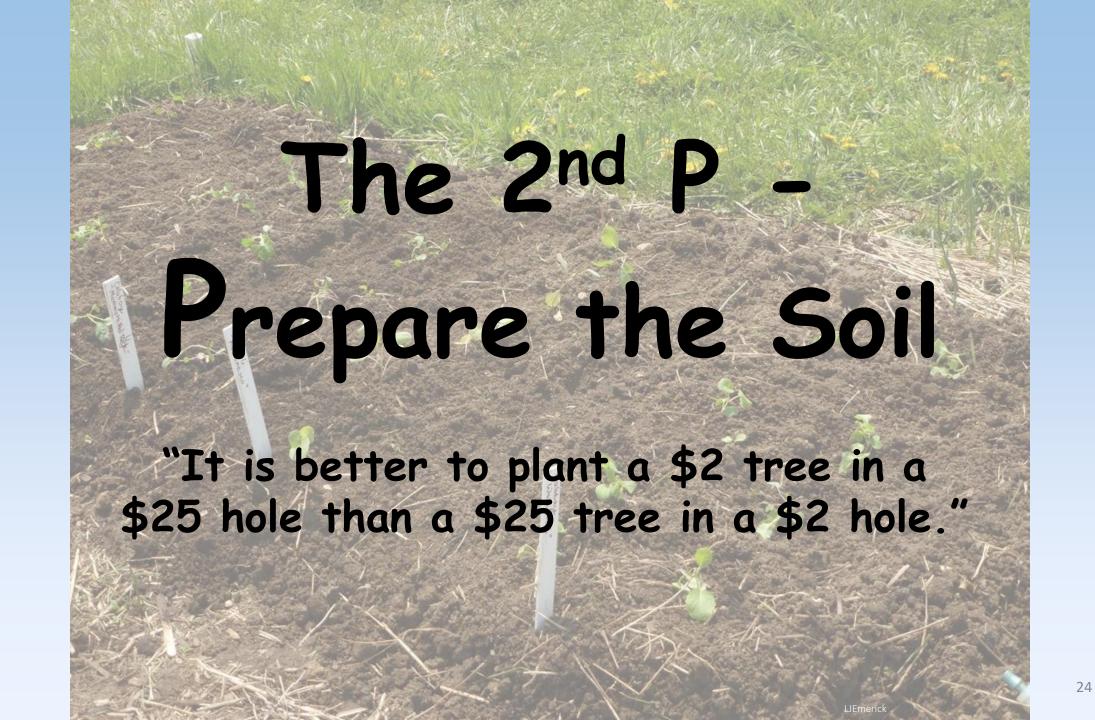


Disadvantages

- Frequent watering unless using a self watering container.
- Growing limits if an incorrect size container is used.



Questions?



IMPORTANT PREP -- Test the Soil

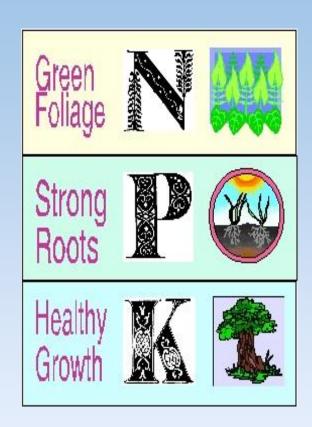
What is a Soil Test? Chemical analysis estimating a soil's ability to supply nutrients.

- Provides baseline data on and interpretations of soil pH, nutrient levels, and organic matter content
- Includes levels of soil's primary macronutrients, phosphorus (P) and potassium, (K) and trace elements such as calcium (Ca) and magnesium (Mg)
- Provides recommendations for adjusting soil pH and fertilizing including Nitrogen

NOTE: UMD recommends testing soil for Lead (Pb) contamination. Desired levels are less than 400ppm in bare soils. See Resources for more information.

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. Topsoil is unregulated in MD

Who should test the soil? (Which lab?)

- · They vary! See list in resources from UMD Extension
- DIY test kits are not recommended- test interpretation can be complicated

-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
- Mail the sample to the lab per their instructions

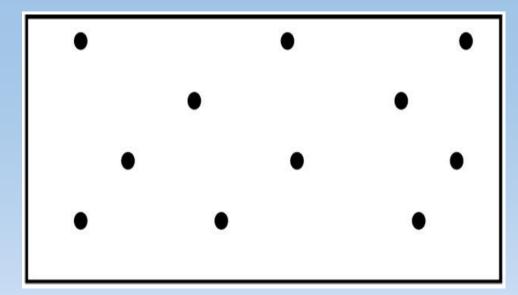


Photo Penn State Univ.





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. It brings up weed seeds so they can germinate.
- 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 dispose of 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, <u>dig by hand</u>, sheet mulching, cover with weed block fabric to kill vegetation
 - -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 soil - no till or minimum till methods recommended



- Wet thoroughly.
- Add a thick layer of organic matter.
- Avoid planting directly into wood or bark mulches, which take time to break down.

- 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.



Questions?

BREAK

10 MIN.

The 3rd P-Plant Your Garden

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

Popular Crops for Beginners



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



UMD HGIC 2024 - The Year of Heirloom Tomatoes!

Tomatoes are the most popular home garden crop - found in 86% of home food gardens

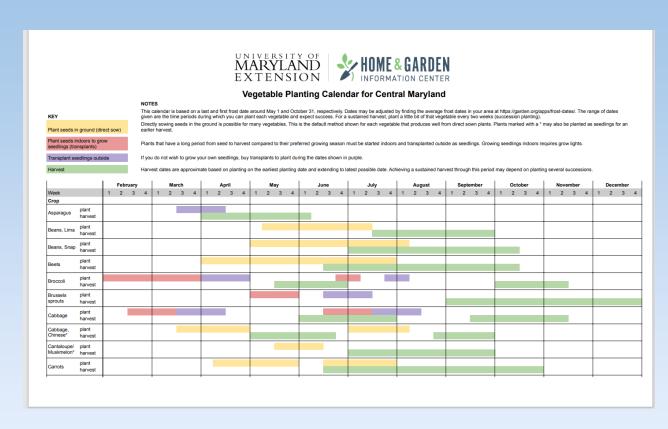
- · Hybrid vs. heirloom What is the difference?
- · Determinate vs. indeterminate
- Plant tomatoes deep up to their top leaves to encourage root development
- Provide support (trellis or stake) if possible



When to Plant

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





Use the UMD HGIC Planting Calendar to know when to start, plant, and harvest your vegetable crops

Cool Season, Warm Season

- <u>Cool season crops</u> (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).

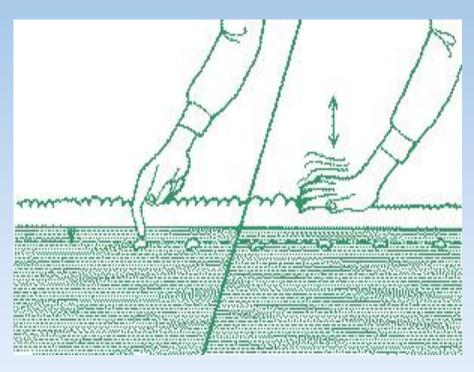


 Make a shallow furrow to plant a single row...

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.
- Don't water with too much force
 it could wash the seeds away
 from the planting site

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.

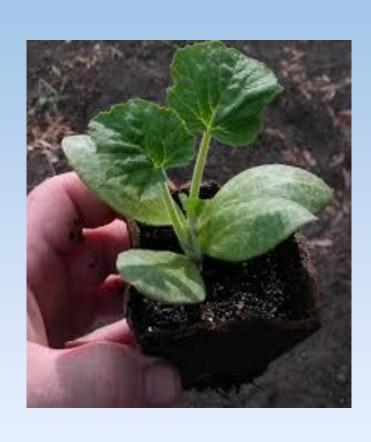
Correct spacing for large onions



Overcrowded okra



Planting Transplants



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

Companion Planting -Some Fact, Some folklore

 Companion planting is the practice of growing several types of crops near one another to enhance crop production

Companion Planting Can

Enhance physical environment -

- Provide support for vining crops
- Block wind, sun, weeds
- Enrich soil natural mulch, nitrogen fixing
 Pest Control -
- Attract Beneficials: Pollinators, Predators, and Parasitoids
- Trap Crops draw pests away from main crop

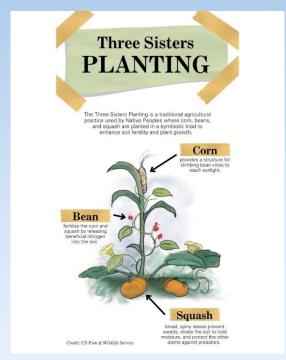


Photo USFWS

Remember to consider the timing and spacing of companion plants

Polyculture – planting diversity in the garden – is beneficial in multiple ways

Companion Planting - continued

Remember to consider the timing and spacing of companion plants

- Make sure the growth stage (e.g., blooming, fruiting) of the companion plant is timed to benefit your desired crop
- Make sure the companion plant is close enough or far away enough to achieve your goal



THINK OUTSIDE THE VEGETABLE BIN:

Flowers and herbs interplanted with vegetables attract beneficial insects Can

Trees, shrubs, and native grasses can all be great companion plants



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
- Water the roots, not the leaves.
 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.





Garden Pests



- Monitor your garden often.
- Identify the pest.
- Determine extent of damage.
- Hand-pick (caterpillars), wash off (aphids) if possible.
- Try to attract natural predators (wasps, lady bugs, toads, birds).
- Use barrier methods like insect netting or row cover to exclude pests

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, melon) once the flowers bloom.
- Consider Parthenocarpic (Don't need pollination) varieties if insect pressure is severe



Source: https://ag.umass.edu/home-lawngarden/fact-sheets/wildlife-excluding-repellingproblem-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
- Vegetable Planting Calendar | University of Maryland Extension (umd.edu)
- Soil to Fill Raised Beds | University of Maryland Extension (umd.edu)
- Growing Vegetables in Containers | University of Maryland Extension
- Salad or table boxes
- How to Start a Vegetable Garden | University of Maryland Extension (umd.edu)
- Fertilizing Vegetables | University of Maryland Extension (umd.edu)
- 2023 Charles County Rain Barrel Workshops | University of Maryland Extension (umd.edu)
- The Safety of Materials Used for Building Raised Beds | University of Maryland Extension (umd.edu)
- Year of the Heirloom Tomato | University of Maryland Extension (umd.edu)





Photo Credits unless otherwise labelled are from the University of Maryland Extension or by CC Master Gardeners.

Resources, continued

- 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
- Companion Planting | Extension | West Virginia University (wvu.edu)
- WSU Extension Publications | Gardening with Companion Plants (Home Garden Series
- Lead in Garden Soils | University of Maryland Extension (umd.edu)



Photo Credits: Unless otherwise noted, photos in this presentation are from UMD Extension or were taken by Charles County Master Gardeners.

UME Resources









go.umd.edu/hgic

go.umd.edu/askextension

marylandgrows.umd.edu







MASTER GARDENER HANDBOOK

go.umd.edu/mg

go.umd.edu/mglocalprograms

go.umd.edu/mghandbook





go.umd.edu/giei

University programs, activities, and facilities are available to all without regard to race, color, sex, gender identity or expression, sexual orientation, marital status, age, national origin, political affiliation, physical or mental disability, religion, protected veteran status, genetic information, personal appearance, or any other legally protected class.

MARYLAND GARDENER CARDENER

MARYLAND EXTENSION







MARYLAND EXTENSION







MARYLAND EXTENSION









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



This presentation is based in part on one developed by the Baltimore County Master Gardeners Grow It Eat It team and presented by Tom Potyraj. On YouTube see <u>Starting a Vegetable</u>

Garden!

MARYLAND GARDENER CARDENER

This program was brought to you by
University of Maryland Extension
Master Gardener Program
Charles County

Please help us improve our programming! Take our brief survey at

https://go.umd.edu/MGprograms24

