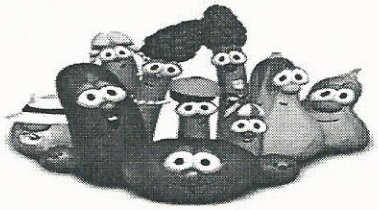


Lesson Plan
Greens and More Greens

Subject Area: Health
Topic: Micro Greens
Grade Level: Fifth Grade
Time Required: 45 Minutes for 2 days

Objective: Scholars will be able to understand the importance of eating healthy by planting and harvesting Micro Greens. Scholars will be able to use the greens in a vegetable salad.

Standards: Maryland College and Career Ready Standards

- Range of Reading Level of Informational Text-CCSS.ELA-Literacy RI.5.10
- Integration of Knowledge and Ideas-CSS.ELA-Literacy RI.5.7
- Key Ideas and Details- CSS.ELA-Literacy RI.5.5

Overview and Background Information

Using the information from the Micro Greens a discussion on how to grow greens for healthy eating will generate knowledge and curiosity on how we can do this in the classroom. Safety routines will be discussed. Vocabulary will be cleared. Explanation of materials being used. Review parts of a seed (skill sheet)

Vocabulary

- Micro Greens
- Cabbage
- Mustard
- Seeds
- Germination
- Cotyledon
- Photosynthesis
- Harvest
- Vegetables
- Nutrition

Materials

- Micro Greens-Cabbage
- Micro Greens-Mustard
- Magnifying glasses
- Paper
- Pencils
- Crayons/colored pencils
- Small paper cups for each scholar
- Water
- Soil
- Seeding tray with cover
- Seeds

Interest approach/Introduction/Energizer:
On a tray will be samples of different kinds of greens

- Kale
- Turnips
- Parsley
- Collards
- Spinach
- Lettuce

Discussion on how these greens were grown and the importance in a healthy diet

Topics/ Activities

- Using the magnifying glasses scholars will examine the seeds and the soil
- Have scholars record what they see in their journals
- Scholars will plant seeds according to the directions in "How are Micro Greens Grown?"
- Observe the seeds over the next couple of days
- Prepare the harvest
- More examination to adult plant
- Record results
- Tasting the greens
- Preparing a salad for others to try

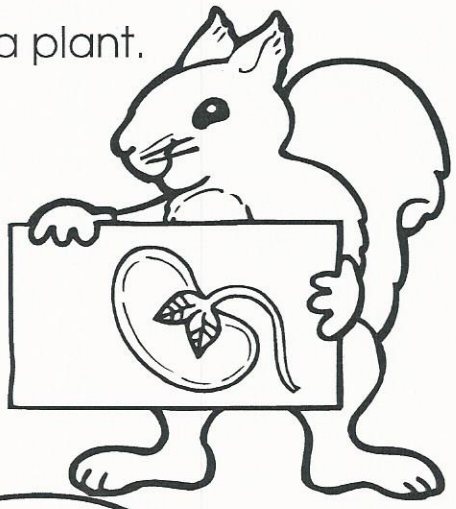
Closing/Reflection

- Scholars will write about the experience
- Drawings and illustrations for each of the seeds and adult plant
- Compare and contrast the two greens
- Create a survey to determine which was the most popular micro green

Name _____ Inside the seed coat

Inside A Seed

Inside a seed, there are parts that grow into a plant.
There are **leaves** and a little **root.**



Seed food is inside a seed too.
The seed food is used by the little root and leaves to help them grow.

Write the names for the parts of the seed.

Write.
Tell why the **seed food** is important.

Micro Greens

Grade Level:
Pre K-6

Time Considerations:
30-60 minutes depending on activities selected

Vocabulary:
Micro Green, Cabbage, mustard, Seeds, Germination, Cotyledon, Photosynthesis, Harvest

Materials:
- ✓ Micro Greens
  - Cabbage
  - Mustard
- ✓ Magnifying Glasses
- ✓ Paper
- ✓ Writing utensils
- ✓ Colored Pencils
- ✓ Small paper cups (one per student)
- ✓ Potable water
- ✓ Saltines (enough for every student to have several crackers)
- ✓ Napkins

As part of the Fresh Fruits and Vegetable Program, Micro Greens, grown and harvested by Baltimore City students at Great Kids Farm have been delivered to your school. The following information may be utilized in your classroom to familiarize your students with this healthy snack.

What are Micro Greens?

Most people encounter micro greens as a gourmet salad or a garnish to a meal served in a restaurant. A micro green salad is a combination of several varieties of leafy vegetable plants that are harvested at the seedling stage of growth. The mix contains thin stems and small leaves that actually taste similar to the vegetables the plant would produce if they were left to grow to maturity. The plant varieties in the micro green mix are selected based on the color and texture of the leaves, the taste of the product, the cost of the seed, and the speed in which the seedlings can be produced and harvested. Most mixes have a flavor ranging from mild to spicy.

What is the Seedling Stage of a Plant?

The phrase "seedling stage" refers to the early stage of plant growth when only the stem and cotyledons are present. When a plant first emerges from the seed, it carries two round or heart-shaped leaves with it. These "first leaves" are called cotyledons and were actually stored in the seed with the embryo of the plant.

The cotyledons contain all the energy the plant needs for survival until it can start making its own food through the photosynthesis process. Once the plant begins to produce new leaves or "true leaves" the plant will collect sunlight and begin making its own energy.

What Types of Plants are in a Micro Green Mix?

There are a wide variety of plants that can be harvested at the seeding stage for use in a micro green mix. The most common plants are those that produce a leafy green such as radishes, beats, basil, kale, sorrel, pac choi, and mustard greens.

The micro green mix that has been delivered to your school consists of two varieties of seedlings; cabbage and mustard. The cabbage micro greens are newly sprouted cabbage plants that are usually green in color

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10/14/14

Micro Greens

How are Micro Greens Harvested?

Once the true leaves begin to emerge on the seedlings, it is time to harvest the crop. This can be quickly performed by using scissors to cut the plant stems just above the soil line. The seedlings are then immediately placed in a cool water bath to slow down their metabolic rate. As with all living things, once their lifeline has been cut, they immediately begin to decompose. By placing the freshly cut seedlings in cool water their decomposition rate will slow ensuring a longer crisp shelf life of the crop. After all of the varieties have been mixed together in the cooling bath, the seedlings are then spun out in an industrial salad spinner to remove the excess water and packaged in plastic bags for refrigerated storage.

Suggested Activity

The following suggested activity is designed to be modified for use in your regular classroom curriculum. Not all components are appropriate for all grade levels.

Discovering Micro Greens: Tell students that they are going to be scientists today, and part of being a successful scientist is to identify and notice important characteristics about the object they are studying. Provide each student with one cabbage seedling and one mustard seedling. (Be sure to remind them not to eat the greens until told to do so) Have students examine each micro green variety and identify the parts of the seedling (stem, cotyledon, and true leaves.)

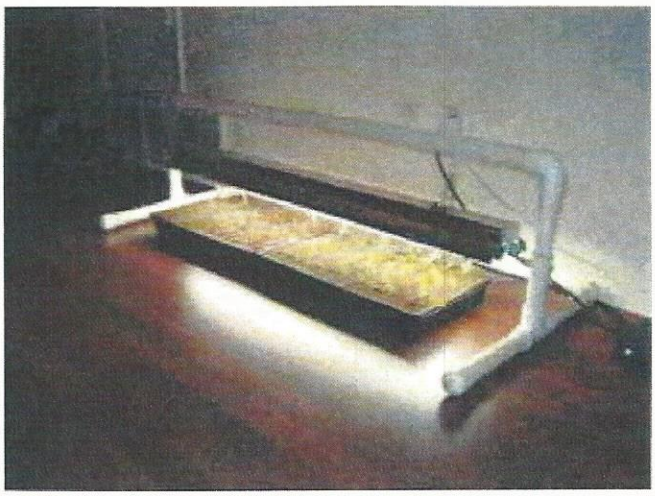
Ask students to take a second look at each variety with a magnifying glass. Have them note similarities and differences between the two varieties as well as any important characteristics they may notice on the data collection sheet (located at the end of this document.) Ask the students to then draw and label the parts of each seedling as accurately as possible (older students could include the function of each part as well.)

Next, have all the students participate in a groups tasting of the greens. Explain to students that not everyone likes the same tastes, but everyone deserves the chance to try it for themselves. The best way for everyone to taste the greens is to do it by variety and at the same time as a group. Taste the cabbage first, then the mustard, and finally as a mix (mixture sample will need to be provided to the students.) Have students talk about the taste of the varieties between each tastings and record the flavors on the data collection sheet. (A fun idea to make the activity more sophisticated is to have the students cleanse their pallet with water and saltines between each variety.)

After the tasting is complete, remind students that another trait of a successful scientist is being able to properly communicate their findings. Ask students to write a short essay outlining their procedures and observations or a reflection on the experience as a whole.

Build Your Own Grow Light Stand

Materials:



- 1, 4' shop light hood
- 2, 4' fluorescent light bulbs
- 1, 1 ¼ "x10' PVC pipe
- 4, 1 ¼ " PVC elbows
- 2, 1 ¼ " PVC Tee
- 2, 1 ¼" End Caps
- 4, S hooks*
- 2, 6" pieces of chain*
- 2, ¼"x3" Eye Bolts*
- 2, ¼" Washers*
- 2, ¼" Nuts*
- 1, Hack saw
- 1, permanent marker
- 1, 10' or greater tape measure
- 1, electric drill with ¼" bit

***Your light hood may already come with chain, hooks, and bolts**

Instructions:

- Stretch the tape measure out to 10' and lay the 10' PVC pipe parallel to it. Using the permanent marker, make a mark at 3", 6", 9", 1', 6', and 8'. This will allow you to cut the pipe into:
  - 1, 5' piece
  - 2, 2' pieces
  - 4, 3" pieces
- Double check your measurements. Once you are sure your measurements are accurate, use the hack saw to cut your pipe.
- Drill holes through the 5' piece of pipe about 6" from each end.
- Insert one eyebolt through each hole with the eye facing downward. Secure the eyebolt in place with a washer and nut
- Place a PVC elbow facing downward on both ends of the 5' pipe.
- Place 2 of the 3" pieces of pipe into opposite ends of one of the PVC Tees. Then, place an end cap on the other end of the 3" pipe. Repeat for second PVC Tee
- Place one PVC tee on each of the 2' pieces of pipe
- Place the opposite end of each 2' pipe into the downward facing elbows of the 5' pipe
- The stand should be able to stand on its own
- Insert light bulbs into the hood, and connect the hood to the stand using the S hooks and chain.

10/14/14

Fact Sheet

History of Hydroponics

The growing of plants in water that contain dissolved nutrients is called **hydroponics**. Hydroponics is derived from two Greek words: **hydro** = water and **ponos** = labor. *Hydroponics* literally mean water working.

When we grow plants we usually think of soil doing the work instead of water. Most crop plants are grown outdoors or in greenhouses in soil or containers filled with soil.

In the United States, some of the vegetable and flowers that we might buy at the grocery store ate grown by the hydroponic method. Tomatoes, cucumbers, and lettuce are the moist common crops grown by the hydroponic method. Many growers are experimenting with spinach, herbs, and some flower crops.

Hydroponically grown fresh vegetables have only been available in the grocery stores for a few years. The practice of growing plants hydroponically is not new. The Ancient Egyptians grew plants in water. In Mexico grew plants on floating rafts and the Ancient Chinese had floating water gardens.

During the 1600 and 1700's scientists in Europe determined that plants need substances from the soil to grow, even when the plant was growing in water. In recent years hydroponic methods of growing plants were used to determine what nutrients are needed for best plant growth. Many basic nutritional formulas that are now used in plant foods (fertilizers) were developed from this laboratory use of hydroponics.

Flower growers in the United States have experimented with hydroponics since the late 1920's the greenhouse industry became interested in alternative methods of growing plants because the soils in the greenhouse had to be replaced often, because of pest and fertility problems.

Greenhouse growers also started experimenting with commercial applications of nutriculture in the 1920's. Nutriculture is the practice of growing plants in an inert material such as gravel sand, vermiculite, or rock wool. Inert materials are chemically inactive.

They do not provide any nutrients to plants, so a nutrient solution is applied to the root zone periodically to provide plants with the needed nutrients. The frequency of the application of nutrient solution may vary from 2 - 3 times a week to 2 - 3 times a day. Because nutriculture and hydroponics both use a nutrient solution to provide all necessary nutrients to a plant, they are very similar. Nutriculture, hydroponics, and soilless culture are terms that are often used when referring to a hydroponics system, although they may have some slight differences.

A practical application of nutriculture occurred during World War II. Both the United States and Japan used several nutriculture operations to feed military personel who were stationed in the South Pacific. Many of the islands were very rocky and had little soil on them. The United States installed sand beds on several islands including Ascension Island, Iwo Jima, and at Atkinson Field in British Guinea. Vegetable crops were planted in the sand and a nutrient solution was applied periodically. The military continued to experiment with hydroponics after World War II and the commercial interest in hydroponics spread throughout Europe, Russia, and Israel.

PRESENT USE OF HYDROPONICS

Commercial hydroponic installations are operating all over the world. The development of plastics has made constructing hydroponic operations more economical. Plastic & vinyl can be used in designing the beds in which plants grow, instead of concrete and steel. The use of automatic irrigation equipment and automatic timing devices have reduced the amount of labor required to maintain hydroponic installations. Improved water and plant tissue testing have reassured growers that they are applying the proper ratio of plant nutrients to their hydroponic crops. Increased interest in commercial hydroponic installations have occurred, in areas of the world where there are water shortages such as in the Middle East or in Mexico and in areas where there is a dense population and very little available farm land such as Japan. Interest in hydroponics has also been keen in the urban areas of the United States, especially ground water pollution runoff from agriculture operations is a major problem

1-8-15

THE IMPORTANCE OF WATER IN A HYDROPONIC OPERATION.

Since all essential plant nutrients are supplied to a plant by the nutrient solution in a hydroponic operation, it is easy to understand why the quality of water is so important. There are several measures of water quality in which a grower is interested. A complete analysis of a grower's water supply can be performed to indicate the quality of the water. This can be done be a commercial laboratory or by some water supply companies.

Two of the most important items of water quality that a grower would test are the pH of the water and the amount of soluble salts in the water. A complete water analysis would also indicate the hardness of the water and the amount of some elements such as chlorides, sulfates, nitrates, calcium, magnesium, sodium, boron, and fluorine in the water. Knowing how much of these elements are already present in the water may effect the formulation of soluble fertilizer that a grower would add to the water. The concentration of hydrogen ions in a solution is measured by pH. In other words, this is a measurement of the acidity or alkalinity of the substance on a scale from 1 to 14.

Substances with a pH of 7 have a neutral pH. When the substance has a pH of less than 7 it is called acid. When the pH of a substance is more than 7 it is called alkaline. The lower the number is on a pH measurement, the more acidic the solution. The higher pH measurement, the more alkaline the solution. Most flowers and vegetables grow hydroponically somewhere between 5.8 and 6.8. A pH of 6.3 is ideal.

The pH of a solution can be tested using nitrazine papers, more sophisticated test solutions, and pH meters. Large commercial growers will want to have a very precise but a general pH reading should be adequate for home/hobby growers.

The amount of soluble salts in the water supply is a prime concern in hydroponic growing. Water that has a high amount of soluble salts in it can injure plant roots, effect which nutrients the plant can take out of the water, and even cause the plant to wilt and die. Water with sodium chloride content of 50 (parts per million) ppm or greater is generally not suitable for plant growth. The addition of

Many people may be concerned about the hardness of their water. In areas where the groundwater is located near limestone, hard water is common. Most hard water contains salts of calcium and magnesium and has higher pH than soft water. Hard water can normally be used without any difficulty in a hydroponic operation. However, some adjustments in the nutrient solution may be needed, such as lowering the pH or reducing the amount of calcium and magnesium in the nutrient solution.

MONITORING AND USING THE NUTRIENT SOLUTION

There are many different types of hydroponic systems. In some hydroponic systems, a nutrient solution may be added to the root zone of the plant continuously. In other systems the nutrient solution may only be applied 2 times a day. The nutrient solution is recycled and used again by the plant. Each time a plant is irrigated with a nutrient solution, some of the nutrients are removed from the solution by the plant. The pH of the nutrient solution also changes as plants take up some of the nutrients. In time, some of the nutrients in the nutrient solution may be used up. The nutrient solution then must be replenished or a new solution made.

The length of time the same nutrient solution is used depends on the grower and the crops that are being grown. In some parts of the world where water is in very short supply, the same nutrient solution may be tested, the needed nutrients added, and then reused for a period of months. A complete analysis of the nutrient solution is expensive and takes a considerable amount of time. Most hobby growers and many small growers use the same nutrient solution for a specified period of time, for example 10 days, then discard the old solution and make up a new batch of nutrient solution. If water-borne plant diseases are not present in the nutrient solution, the old nutrient solution can be used to fertilize outside plants that normally would not be fertilized.

Acid - a pH of less than 7.
Alkaline - a pH of more than 7.
pH - a measure of the concentration of the hydrogen ions; the acidity or alkalinity of a solution. Measured on a scale of 0 - 14.
Soluble salts - the total amount of soluble fertilizer residue and other soluble mineral residue found in the media and/or media solution.

Activity Sheet

Hydroponic Scientist OBSERVATIONS

Crop _____ Date Planted _____

What do you think the plants (crop) will look like?

How long do you think that it will take before you can harvest (eat) the crop? _____ Days

Instructions: You are going to make a graph when you collect all of the information. As a plant scientist you will need to be neat, and accurate in collecting all of the information. You will need to draw a picture of your plant at the end of each week. You will need to measure how big the plant is when you draw it. You will need to count the leaves of the plant at the end of each week.

Date _____ How Many Leaves? ___ How big? _____	Date _____ How Many Leaves? ___ How big? _____	Date _____ How Many Leaves? ___ How big? _____
Date _____ How Many Leaves? ___ How big? _____	Date _____ How Many Leaves? ___ How big? _____	Date _____ How Many Leaves? ___ How big? _____
Date _____ How Many Leaves? ___ How big? _____	Date _____ How Many Leaves? ___ How big? _____	Date _____ How Many Leaves? ___ How big? _____

Prepare a report to the Chief Grower of Hydroponics on what you observed and how the plants grew. Include in the report a graph and growing instructions.

Growing Plants Hydroponically

Hydroponics

the growing of plants in water that contains dissolved nutrients

Hydro = water

ponos = labor

17 Essential Plant Nutrients:

Carbon (CO_2) & Oxygen (O_2)

are obtained from the atmosphere.

Hydrogen (H)& Oxygen (O_2)

are obtained from water.

Nitrogen (N), Phosphorus (P), and
Potassium (K)

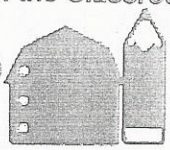
are considered primary macronutrients and are obtained from soil, fertilizer, and/or nutrient solution.

Calcium (Ca), Magnesium (Mg), and Sulfur (S)

are considered secondary macronutrients and are obtained from soil, fertilizer, and/or nutrient solution.

Iron (Fe), Manganese (Mn), Zinc (Zn),
Copper (Cu), Boron (B), Molybdenum (Mo),
Sodium (Na), and Chloride (Cl)

are considered micronutrients and are obtained from soil, fertilizer, and/or nutrient solution.



Step 2: Selecting the Desired Plants

a) Fruits

Cucumber
Melons
Strawberry
Tomato

b) Flowers

Chrysanthemums
Gladiolus
Rose

c) Vegetables

Bean
Spinach
Lettuce
Pepper

d) Herbs

Parsley
Basil

Hydroponic Scientist

This is to certify that

_____

has participated in the applied science of growing plants HYDROPONICALLY.

Growing plants is a part of the food and fiber system that makes agriculture the largest industry in the United States.

Some of the careers in Agribusiness are: producing, managing, processing, marketing, distribution, and service.

_____ _____

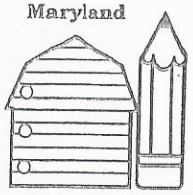
Hy Drow Ponics
Chief Grower

Teacher

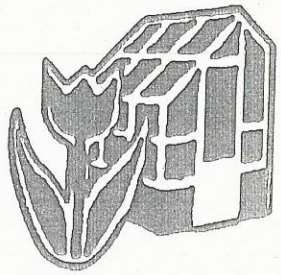
_____

Date

Maryland



Ag in the Classroom



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GROW IT EAT IT
Maryland's Food Gardening Network
University of Maryland Extension

GE 003
2009

Monthly Tips for Food Gardeners

(Note: Planting dates are for Central Maryland. Western and northern counties could be 1-2 weeks later and southern Maryland and the eastern shore could be 1-2 weeks earlier.)

January

Decide on a good site for a new vegetable garden: sunny, level, accessible to water.

Make a garden plan. Put your plan in a notebook or garden journal and start recording ideas, notes from reading or websites.

Purchase a high-low thermometer, to track weather patterns throughout the year.

Order catalogs and seeds, especially if you want to start slow-growing, unusual or heirloom varieties indoors under lights. (See HG #70 "Recommended Vegetable Cultivars for Maryland Home Gardens"- on the Grow It Eat It website).

Test viability of saved or leftover seeds by placing 20 on a moist paper towel; roll up and put in perforated plastic bag. Set bag on top of refrigerator; in 7 days, count sprouted seeds. If less than 70 percent, toss out and buy new seed.

February

If starting seeds indoors, set up florescent grow lights, and gather needed materials: pots, trays, soil-less mix.

Early in the month, start seeds of early crops, such as leeks, onions, shallots and artichokes indoors, under florescent lights. Also start peppers- they are very slow growing.

Later in the month, start seeds indoors of beets, turnips, Chinese cabbage, kale and other early crops. These will be ready to set out in the garden in 3-5 weeks. (Or, direct seed these crops in the garden as soon as soil can be worked.)

Build a cold frame. Late in the month, add compost and good soil; sow spinach, lettuce, or a mesclun mix for early greens.

Start a compost pile if you don't have one.

March

If you did not test soil in fall, as soon as ground thaws, take soil samples from different parts of the garden, to a depth of 6 to 8 inches. Send to a soil testing lab (University of Maryland's Home and Garden Information Center, www.hgic.umd.edu, tells how to take samples and lists regional lab; see "Selecting Soil Test Lab," HG#110.)

Amend soil according to soil test results, which may call for adding lime or other nutrients. When the ground can be worked, dig in that layer of well-aged manure, compost, mushroom soil, or leaf mold to improve soil texture and fertility.

Put up trellises and teepees for peas, pole beans and other climbers. Waiting until plants come up can harm plant roots.

Harden off leeks, shallots, and onions in cold frame, or set outside on a porch or protected area, a few hours a day at first, before bringing them in at dusk; then gradually working up to eight hours a day. Do this for about a week, before transplanting in the garden. (Follow this same procedure for any crop started indoors.)

As soon as soil can be worked, plant potatoes,

Pound in stakes or install tomato cages, at planting time, to prevent plant damage later.

Set out herbs in pots or plant in garden beds.

Inspect plants daily for cucumber beetles, cabbageworms, vine borers and flea beetles, which can be excluded with row covers. For plants requiring cross-pollination—cucumber, squash, melon, pumpkin—take covers off when plants are flowering, to let in pollinators.

Hand pick cabbage worms from broccoli and other members of the cabbage family, or spray with Bt (Bacillus thuringiensis). Bt may injure non-pest butterfly larvae, though, so use judiciously.

June

Plant a second crop of beans.

Keep watering and weeding; mulch new crops to keep them from drying out.

Learn to identify beneficial insects and keep a vigilant eye out for possible pest infestations.

If aphids are a serious problem, apply a light spray of horticultural oil, or insecticidal soap. Lady bird beetles will usually keep aphids in check.

Hand pick cabbage worms from broccoli and other members of the cabbage family, or spray with Bt (Bacillus thuringiensis), if necessary.

Hand pick Colorado potato beetle adults, larvae and orange egg masses on potato and eggplant plants.

Hand pick harlequin bugs and their black and white eggs from plants in the cabbage family. Do the same for Mexican bean beetles (yellow egg masses on leaf undersides).

Prevent flea beetle infestations with row covers. Spray with pyrethrum or neem, both are derived from plants and considered low-risk organic controls. A light dusting of eggplant leaves with flour or wood ash can also deter flea beetles.

Search the undersides of squash and pumpkin leaves for copper-colored squash bug eggs, and destroy them.

For slug damage, in a wet period, set out tuna cans filled with beer or a brew of molasses, water and yeast. The slugs will crawl into them and drown. Boards and grapefruit rinds, turned face down, will also attract slugs; turn the board or rind over in the morning and destroy the slugs.

Pinch off tomato suckers, to encourage larger, earlier fruit, especially if training to one central stem.

July

Sow heat-tolerant greens like Swiss chard, Malabar spinach, mustard greens and lettuce cultivars like 'Red Sails', 'Deer Tongue' and 'Jericho'. Planting in semi-shade, or covering with a shade cloth or row cover helps reduce heat stress in mid-summer.

Sow seeds of broccoli, cauliflower, turnips, beets and other fall crops in late July.

Sow seeds of squash, beans and cucumbers through the end of July.

Monitor squash and pumpkin vines for squash vine borers. If leaves are wilting, or you see holes in the lower stems, with sawdust-like fresh, or droppings around the holes, slit the stem above the hole and with a razor and remove the larva. Then mound soil around the injured stem.

If tomatoes or peppers develop blossom-end rot, remove injured fruits, water plants well, and mulch to conserve soil moisture. Consistent watering and adequate calcium can prevent this disorder.

Harvest onions when tops die back; let them dry in the garden after digging them up, or tie the stems together and hang them up in a garage or attic with good air circulation. Store onions in a cool, dry place.

Dig up garlic when the tops yellow and die; let dry in the sun, then store in an airy place before braiding, or storing in mesh bags, and hanging in a dry place.

Cut back herbs to keep them bushy and productive.

August

Plant a late crop of basil, cilantro, and dill.

Plant a last crop of snap beans the first week of August.

Plant cool season crops, including spinach, lettuce, carrots, beets, broccoli, cauliflower, Chinese cabbage, turnips, kale and mustard. Keep seedlings moist and mulched.

Order garlic, walking onions, and shallots for fall planting.

Harvest leaves of herbs before they flower. Pick individually, and dry indoors, or hang the stems a dry, semi-shady room. Store dry leaves in air-tight jars.

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GROW IT EAT IT
Maryland's Food Gardening Network

GE 001
2009

How to Start a Vegetable Garden: 6 Basic Steps

STEP 1—Plan your garden.

- Will you grow vegetables and herbs in containers or in garden soil?
- Start small with an in-ground garden and expand when you are ready. A good starter size is 50-75 sq. ft.
- Will you dig or till your entire plot, or perhaps use raised beds?
- Grow vegetables that you like to eat and are expensive to buy. Some of the easiest vegetables are bush bean, tomato, cucumber, pepper, lettuce, summer squash, and leafy greens (Swiss chard, kale, mustard, etc.).
- Place taller crops on the north and west sides so they will not shade shorter plants.
- Group plants by what season they grow in and how long they take to come to maturity. (This information is available on the Grow It Eat It website.)
- Early, short-season crops, like lettuce, can give way to late season crops after harvest.

STEP 2—Select your site.

- Your garden should be on level ground in a spot that gets at least 6 hours of full sun a day (preferably more).
- Avoid trees, shrubs, and buildings where possible.
- Make sure you have access to every part of your garden—include paths.
- Easy access to water is essential.
- Know your local animal population and fence as needed.

STEP 3—Prepare your soil.

- Vegetable garden soil should be deep and crumbly, should drain well, and should contain plenty of organic matter.
- Have your soil tested to determine nutrient levels and pH, and to be sure it is safe to plant in (less than 400 ppm of lead).
- Turn under or remove the grass sod but do not dispose of it as sod contains valuable topsoil and organic matter. You can also kill the grass by covering it with sections of newspaper and then