



Planting Nutrition

A Gardening Curriculum



Sources:

www.letsmove.gov/gardening-guide
Food and Nutrition Information Center
Journal of the American Dietetic Association
American Community Gardening Association
Mass. Dept. of Environmental Protection and UMass Extension Service
My Plate 10 Tips Educational Series

Planting Nutrition

Garden-based nutrition education programs have the potential to lead to improvements in fruit and vegetable intake, willingness to taste fruits and vegetables, and increased preferences among youth whose current preferences for fruits and vegetables are low. Recent studies show a significant increase in trying more fruits and vegetables after children participated in gardening programs.

When children plant vegetable or fruit seeds and watch them grow, they are learning many things, such as:

- ☒ Food does not start out at the grocery store.
- ☒ Some of our food comes from the earth.
- ☒ Plants need good soil, air, sunshine, and water for growth.
- ☒ Plants have seeds, roots, and leaves.
- ☒ There are seasons and life cycles.
- ☒ Plants are living things and need to be cared for.
- ☒ They can grow some of their own food.
- ☒ Seeds that they find in their fruits and vegetables can be planted to grow more fruits and vegetables.
- ☒ Caring for plants helps develop responsibility. It also builds self-esteem when children see what they grow!
- ☒ A garden can teach children about new foods. Children may be more willing to taste a new vegetable if they have grown it themselves.

The National Conversation continues...

In March of 2009, with the help of local elementary school students, First Lady, Michelle Obama broke ground for a White House kitchen garden and initiated a public campaign to help Americans better understand where their food comes from. "I've been able to have my kids eat so many different things that they would have never touched if we bought it at a store, but because they met the farmer that grew it or they saw how it was grown, they were curious about it and they tried it. Usually they liked it, and they'd eat more and more of it."

Today, the garden is planted, tended and harvested by Mrs. Obama, White House staff, the National Park Service and visitors. Tours of the White House Kitchen Garden are open to elementary, middle and high school students.

Some Basic Tips for Planting with Children

1. A picture is worth a thousand words. Never tell children something when you could show them.
2. Young children have short attention spans. Make sure that you have lots of options available, so they can get started immediately and stay busy. Digging holes is one thing that seems to hold endless fascination.
3. Instant gratification helps a lot. Plant radishes even, if you don't like them — they come up in three or four days.
4. When working with young children, lima beans are big seeds and easy for little hands to hold.
5. Growing their own will generally get children to try the vegetables they would not normally taste.
6. GETTING DIRTY IS AN INTEGRAL PART OF GROWING UP.
7. Your role should be as facilitator. Be a good role model. Have fun!
8. When giving out supplies to children, try to keep seeds, tools, etc. as similar as possible to avoid inevitable squabbles.
9. After an activity, do something to reinforce what everyone has learned. Talk about what went on, who did what, who saw what. If you can, have them keep a diary or draw pictures. If they're too young, take dictation.
10. When working with older children, one to one works better than groups. Try to add responsibility and ownership to projects. ("Jake is in charge of the wheelbarrow today.") Try pairing up older children with younger ones. Be reassured that if you give them a healthy respect for gardens and green things when they are young, it will stay with them throughout their lives.



Enhance Science and Math Learning in the Garden

The foundations of scientific learning lie in inquiry, exploration and observation. The foundations of math are formed with concrete experiences. You can enhance learning by asking questions and documenting experiments such as:

1. What's inside a seed?
2. Does it have a top and a bottom?
3. If we plant seeds in different directions will the roots and leaves still know which way to grow?
4. What does a seed need in order to grow?
5. Let the children experiment by planting in different soils, under varying lighting conditions and temperatures, with more or less water, etc.
6. Compare and discuss the results.
7. Measure daily or weekly the growth of plants and keep a chart or graph.
8. Do all seeds grow at the same speed? Compare the growth of beans or peas to the growth of an avocado seed.

Planting Activities That Are Fun to Do With Children



✂ **Grow Mung Bean, Alfalfa, or other edible sprouts in a jar:**

1. Soak about a tablespoon of seeds overnight in a jar of water. Cover the mouth of the jar with cheesecloth secured with a rubber band.
2. In the morning, drain the water off and set the jar in a cool, dark place.
3. Rinse and drain them at least twice daily for about four or five days. Talk with the children about the changes they notice each day.
4. Place the jar in the sunlight for a few hours to let the chlorophyll form. When the leaves have turned green, the sprouts are ready to eat. Now the children can use them in sandwiches or salads.

✂ **Grow a Baby Citrus Tree:**

1. Have the children save seeds from an orange, tangerine, lemon, or grapefruit and soak them overnight.
2. Provide the children with individual containers for planting (egg cartons, milk cartons, peat pots — just be sure to make drainage holes to prevent the seeds from rotting) and let them fill their containers with good potting soil.
3. Have each child plant 2 or 3 seeds about 1 inch deep in their container. (Have some rulers on hand to talk about how deep 1 inch is.)
4. Have the children keep them in a warm sunny spot, water them as the soil begins to feel dry, and watch for the seeds to sprout.



Start A Seed Garden

Indoor Containers:

milk and juice cartons, mini-cereal box, empty cans, paper cups, egg cartons, empty clean bleach bottle, dishpan, plastic bucket, fish bowl, yogurt cups, clear plastic jar.

- ✦ **Help children plant a “hairy.”** Draw a face on a paper cup, add dirt, sprinkle grass seed on top, and spray with water. As the grass grows the cup will appear to be growing hair for the drawn face. Cut the hair when it grows too long.
- ✦ **Plant seeds in egg shells.** Marigold or pumpkin seeds produce gratifying results and may be planted in the garden by gently crushing the egg shell before putting it in the ground. The seeds are easily tended by placing the egg shells in an egg carton and keeping the lid on until the seeds sprout. Water with a teaspoon.
- ✦ **Save seeds from foods you eat** — try planting apple, orange, grapefruit, and watermelon seeds. What else might you have on the kitchen shelves that will grow? Try popcorn, lima beans, or anything else you have on hand. How about jelly beans? Have the children predict if they will grow.
- ✦ **Flower pot gardens** are easy and take up little space. You can plant radishes, beets, or carrot plants, tomatoes, herbs or flowers. Children will enjoy watering the plants and watching them grow. Seeds from beans and peas grow the quickest.
- ✦ **Plastic scoop planters.** Save the plastic scoops from concentrated laundry detergent powder. After rinsing the scoops thoroughly, give them to the children to fill with soil and use as individual planters.
- ✦ **Salad container greenhouses.** Clear plastic salad containers make great greenhouses for sprouting seeds. Let the children fill the bottoms of the containers with potting soil, add seeds and a thin layer of soil, then water the seeds. Replace the lid, and set the greenhouse in a sunny spot.
- ✦ **Cardboard egg carton planter.** Fill each egg hole with potting soil. Put a seed from a seed packet in each hole. Cover each seed with a little dirt and enough water to make the dirt moist. Close the carton lid and place the carton somewhere warm. Check the seeds every day to make sure the dirt stays moist, but not too wet. When the tiny plants come out, move the egg carton to a sunny spot. Close the lid at night. When the seedlings are an inch high, you can fertilize them with a warm soluble plant food. When it's warm enough to plant the seedlings outside, cut or tear the compartments gently apart. Dig a hole in a sunny spot and plant the seedling along with its carton sections. If it gets cold at night, cover your plant with a paper bag.

- ✦ **See through seed bag.** Fold a paper towel twice, wet it, and lay it inside a plastic, sealable sandwich bag. Place three of any kind of dry beans such, as pinto, lima, or navy, on top of the towel, and close the bag. You can leave it on a windowsill, but it's fun to thumbtack it to a wall and watch the bean plants emerge. When the plants have begun to get a good root system, plant them gently in soil.
- ✦ **Bean Olympics.** Soak 8 bean seeds (or beans from the kitchen cupboard) overnight. Put a layer of gravel about 1/4 inch thick in the bottom of a rectangular cake or other shallow pan for good drainage. Fill the pan with potting soil up to 1/2 inch of top. Space the beans 2 inches apart in the pan and press them into the soil about 1 inch deep. Water well. Place a penny (on which you have taped a number) over each bean. Beans should sprout within a week. The first bean to turn over its penny wins the contest!

Note: Activities using small objects like dried beans and pennies may not be suitable for children under 5.
- ✦ **Planting peanuts.** Did you know that a peanut isn't really a nut? It's related to the legume (like lentils and beans) family. When the plant's yellow flowers fade, the stalks curve into the soil, where the seeds (peanuts) form in a pod or shell. To honor peanut month in March, try planting a few raw (not roasted) shelled peanuts about 1 inch deep in a pot of sandy soil. Place the plants in a warm, sunny place and water well. Before long, round and strong leaves should emerge.
- ✦ **Wheat berries.** Wheat is a grass, and its seeds are called "wheat berries." Wheat flour is ground-up wheat berries. Wheat berries are easy to grow, grow more quickly than grass and can be trimmed with scissors. You can buy wheat berries at a health food store and grow them in any container. Wheat berries have long thick roots. You can watch the roots grow by planting the wheat berries in a clear plastic container.
- ✦ **Cereal box garden.** Carefully open the box top and inner liner of a mini-cereal box. Eat the cereal. Cut the liner level with the box top. Fill the liner with soil. Scatter about 1 tablespoon of pre-soaked wheat berries on the soil, cover with 1/4 inch of soil and water until soil is damp.
- ✦ **Root with a view.** Wheat berries have long thick roots. You can watch the roots grow by planting the wheat berries in a clear plastic container.
- ✦ **As the garden grows.** Whether your garden is inside or out, your **school-age children** can use the project to learn more about science. Let the children predict which type of seeds will grow roots first and then which shoots will break through the soil first. Each child can monitor the growth of certain plants by making a growth chart. As time goes on, talk about each graph and compare results. Help the children draw conclusions, such as: radishes grow faster than carrots.

Outdoor Garden Safety for Children

- ✦ Assess a child's willingness, awareness, and responsibility for garden chores.
- ✦ Buy child-sized garden tools to avoid frustration of manipulating rakes and hoes that are too big. Avoid plastic look alike tools that do not really work.
- ✦ A large, colorful bucket keeps small tools organized.
- ✦ Even if a child wears gardening gloves make sure she washes her hands immediately after playing in the dirt.
- ✦ Let the children select their favorite colored tools.
- ✦ Lay rakes prong side down.
- ✦ Define the children's garden with a boundary. A fence, planting bed, or rock wall will help the young gardener feel a sense of ownership, while keeping pets and other critters from damaging the children's hard work.

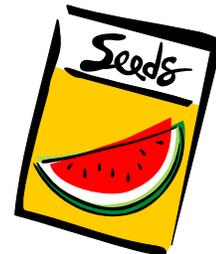
Keep garden chemicals out of reach. Remember that garden insecticides and other chemicals can be very harmful to children who eat everything they see. Organic fertilizers, such as compost, and natural pest controls are the only choice for safety. Yellow sticky traps snare bugs, and let young gardeners get a glimpse of what lives in the environment.

Easy to Grow Seeds for Children's Gardens:

Look for seeds that complete a growth cycle quickly.

These seeds will mature in a very sunny window:

Burpee's Pixie Hybrid Tomato
Royal Oak leaf lettuce
sweet basil
garden cress (takes only 10 days)
bean sprouts



These seeds mature in a spring outdoor dishpan garden:

Cherry Bell radish (22 days)
French breakfast radish (23 days)
sweet early green peas (about 60 days)
loose head lettuces Black Seeded Simpson (45 days) & Salad Bowl (45 days)

These easy to grow seeds can be planted directly into the ground.

carrot	corn	sunflowers
spinach	pumpkin	gourds
peas	zucchini	squash
beans (bush)	cucumbers	

Create Some Compost

Not all soil is rich enough for good planting. To make richer soil, it is important to put materials that were once living back into the earth.

Set aside a spot in the garden for saving:

✍ grass clippings, leaves, vegetable scraps, fireplace ashes, weeds pulled from the garden, twigs, coffee grounds, peanut shells, fruit peels

Do not use:

✍ pet droppings, meat scraps, colored newspapers, raw eggs, bones, butter, or other things that smell as they rot.

Sprinkle soil over a layer of 4 inches of compost matter, then add another layer of compost matter, then more soil. Keep the compost heap wet, and turn things over once a week with a shovel to let air get to the bottom. When the matter has rotted away, you'll find a layer of loose crumbly dark material - compost. Add it to your garden or pots to make things grow better.

Gardening Books for Children

Involving Children in planting and gardening activities not only incorporates science and math curricula, but also leads to language and vocabulary development through books. Consider reading books such as the following:



Isabella's Garden

Glenda Millard

A lyrical picture book explores the continual change that occurs in a garden.

Growing Vegetable Soup

Lois Ehlert

The story of a father and child who plant a vegetable garden in order to make vegetable soup. Recipes for vegetable soup included.

Compost Stew

Mary McKenna Siddals

From apple cores to zinnia heads, readers will discover the best ingredients for a successful compost pile!

Up, Down, and Around

Katherine Ayres

Two children learn about how vegetables grow when helping plant and raise a garden.

Farming

Gail Gibbons

A picture book on the basics of farming.

Pumpkin Circle: The Story of a Garden

George Levenson

Verse and photographs show a backyard pumpkin patch through its cycle.

Lead: An Unseen Hazard in the Playground and Garden

Lead dust in a garden or play area can be very dangerous to small children. As exterior house paint ages, chips and dust that may contain lead fall to the ground and into the soil. This is a greater concern if you live in an older building: until 1978, lead was a primary ingredient in oil-based residential paints. Lead was also used in gasoline until the mid-1980s and may have settled into your yard from car exhaust.

For information on soil testing, contact the University of Massachusetts Soil Testing Lab at 413-545-2311 or contact at <http://soiltest.umass.edu/ordering-information>.

HAVE CHILDREN WASH THEIR HANDS OFTEN!

If lead is a problem in your soil, the following can help:

- Build a covered sandbox where small children can dig. Small children often suck their fingers, so they should have a safe place to play, away from contaminated soil.
- Always wash children's hands before they eat.
- When eating outdoors, eat at a table. Use a clean tablecloth.
- Weeds that are mowed like a lawn will help keep down dust. So will mulch or rubber mats placed over scuff spots, under swings, or at the end of slides.
- Check the ground around your building for paint chips. Throw them away.
- Feed children before sending them out to the garden or playground. Recent studies have shown that if lead is ingested on an empty stomach, up to 80% is absorbed by the body, but on a full stomach, the body absorbs much less, about 10%.
- Help keep children generally healthy through a well balanced diet. One that is high in fiber, calcium and iron and low in fat will contribute to good general health, and it may help prevent the absorption of low levels of lead by the body. Some foods containing calcium are milk, whole or skim, cheese, buttermilk, and yogurt. Foods that have iron high content are lean beef, lamb, liver, kale, spinach, swiss chard, watercress, and turnip and beet greens.
- If children will be actively gardening, consider planting in raised beds with clean soil and compost. Give children their own work gloves to wear while gardening.
- Have children ages 1-6 tested for lead yearly. This can be done at a public clinic or through a private physician.

Sample Successive Planting Schedule

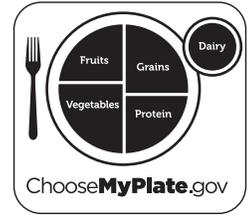


SEASON	WHAT TO PLANT	WHAT TO HARVEST
Very early spring (cool days, cold nights)	Leeks, lettuce, onion, peas, radishes, spinach, turnips	
Early spring (days are warming, nights can still be cold)	Beets, cabbage, carrots, chard, corn, dill, endive, kohlrabi, lettuce, parsley, parsnips, peas, potatoes	Parsnips, onion
Mild spring (days over 60°F)	Asparagus, basil, beans, broccoli, Brussels sprouts, cauliflower, garlic, melons, squash	Asparagus, lettuce, onions, parsnips, radishes, rhubarb, spinach, turnips
Late spring (days over 70°F, nights over 50°F)	Beans, beets, carrots, pumpkins, squash	Beans, beets, broccoli, cabbage, carrots, chard, dill, kohlrabi, spinach, parsley, peas, potatoes
Summer (days over 75°F, nights over 60°F)	Basil, beans, beets, Chinese cabbage, collards, cucumbers, kale, rutabaga, peppers, tomatoes	Beans, beets, broccoli, corn, cucumbers, leeks, lettuce, onions, peppers, squash, tomatoes
Late Summer (days over 70°F, nights over 50°F)	Beans, endive, peas, spinach	Basil, beans, beets, corn, garlic, melons, onions, potatoes, squash, tomatoes
Early Fall (days over 60°F, nights over 40°F)	Lettuce, radishes	Brussels sprouts, collards, kale, peppers, pumpkins, squash
Mid fall (frost appears or temperature drops drastically at night)	Garlic, rhubarb, shallots	Cauliflower, endive, lettuce, peas, potatoes, radishes, rutabaga, spinach, tomatoes

It is exciting and fun to teach children about food through gardening. All age groups can participate, and mostly it is an outdoor activity that children relish. By gardening with children at an early age, they may develop a life-long interest in growing their own fresh fruits and vegetables. There is nothing finer than fresh, wholesome, and tasty produce, especially what you have grown yourself.

Please use the 10 tips on the next page for ideas of how to add the bounty of fruits and veggies to your meals!

liven up your meals with vegetables and fruits



10 tips to improve your meals with vegetables and fruits

Discover the many benefits of adding vegetables and fruits to your meals. They are low in fat and calories, while providing fiber and other key nutrients. Most Americans should eat more than 3 cups—and for some, up to 6 cups—of vegetables and fruits each day. Vegetables and fruits don't just add nutrition to meals. They can also add color, flavor, and texture. Explore these creative ways to bring healthy foods to your table.

1 fire up the grill

Use the grill to cook vegetables and fruits. Try grilling mushrooms, carrots, peppers, or potatoes on a kabob skewer. Brush with oil to keep them from drying out. Grilled fruits like peaches, pineapple, or mangos add great flavor to a cookout.

2 expand the flavor of your casseroles

Mix vegetables such as sauteed onions, peas, pinto beans, or tomatoes into your favorite dish for that extra flavor.



3 planning something Italian?

Add extra vegetables to your pasta dish. Slip some peppers, spinach, red beans, onions, or cherry tomatoes into your traditional tomato sauce. Vegetables provide texture and low-calorie bulk that satisfies.

4 get creative with your salad

Toss in shredded carrots, strawberries, spinach, watercress, orange segments, or sweet peas for a flavorful, fun salad.

5 salad bars aren't just for salads

Try eating sliced fruit from the salad bar as your dessert when dining out. This will help you avoid any baked desserts that are high in calories.

6 get in on the stir-frying fun

Try something new! Stir-fry your veggies—like broccoli, carrots, sugar snap peas, mushrooms, or green beans—for a quick-and-easy addition to any meal.

7 add them to your sandwiches

Whether it is a sandwich or wrap, vegetables make great additions to both. Try sliced tomatoes, romaine lettuce, or avocado on your everyday sandwich or wrap for extra flavor.



8 be creative with your baked goods

Add apples, bananas, blueberries, or pears to your favorite muffin recipe for a treat.

9 make a tasty fruit smoothie

For dessert, blend strawberries, blueberries, or raspberries with frozen bananas and 100% fruit juice for a delicious frozen fruit smoothie.



10 liven up an omelet

Boost the color and flavor of your morning omelet with vegetables. Simply chop, saute, and add them to the egg as it cooks. Try combining different vegetables, such as mushrooms, spinach, onions, or bell peppers.



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Auburn, MA 01501
1-800-222-2731
www.yoursforchildren.com

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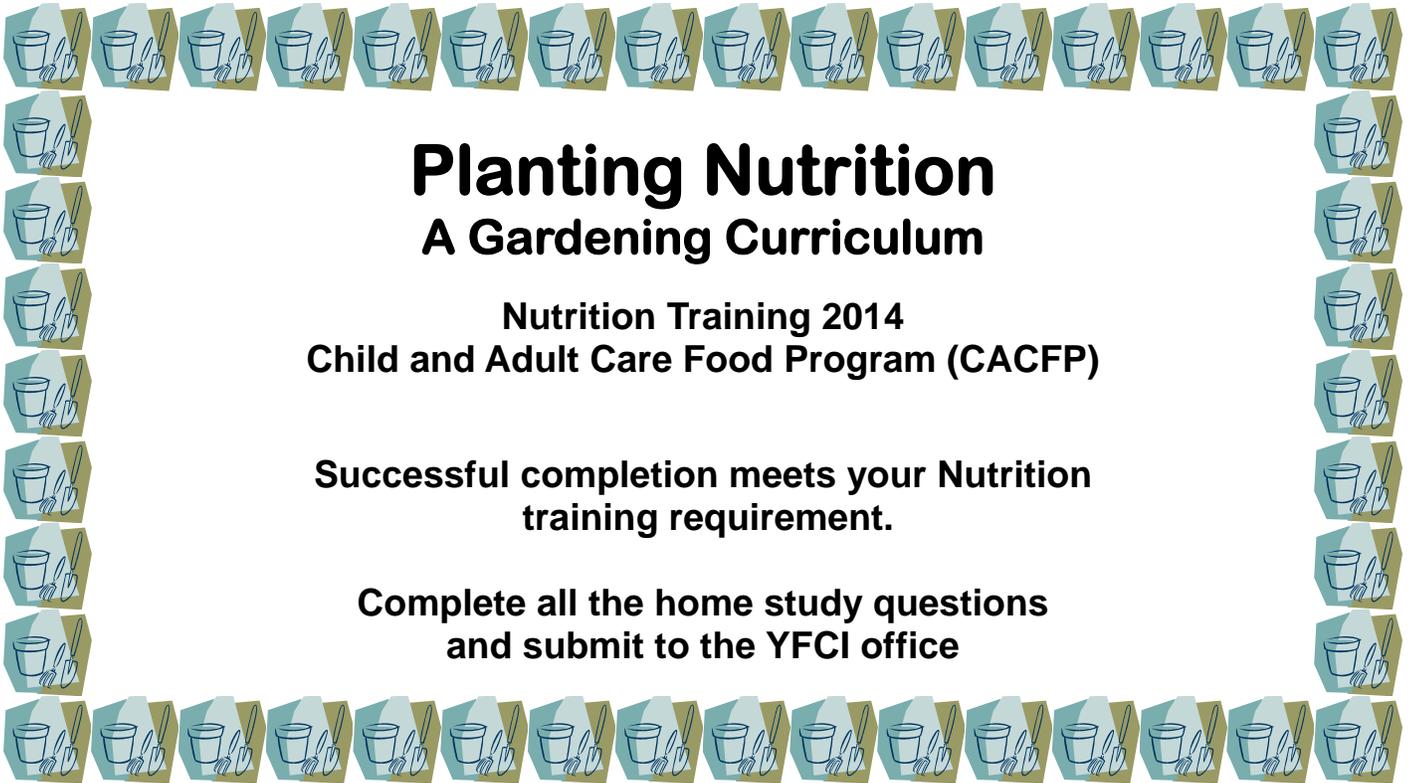
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Planting Nutrition A Gardening Curriculum

May 2014 Nutrition Home Study

TO:



Planting Nutrition A Gardening Curriculum

**Nutrition Training 2014
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**Successful completion meets your Nutrition
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