

FROM THE GROUND UP **FAMILY ACTIVITY GUIDE 1:** **GROW A HOME GARDEN**

Have you and your family ever thought about planting a home garden? Since ancient times, people have created gardens to grow food and design beautiful outdoor spaces. There are many kinds of gardens. Some include plants and flowers. Some include vegetables. Others, like a butterfly garden, are designed to attract wildlife.

The activities in this guide can help you get started creating your own home garden. You will learn about the importance of healthy soil, discover hints for making your soil healthier, identify reasons your family would like to grow a garden, and get a list of gardening resources. Each activity is designed to help your family learn and have fun together. Ready to dig in?

DID YOU KNOW?

Soil is one of Earth's most important natural resources. Most plants rely on soil to grow. Just as we need to get our nutrients from a balanced diet, plants need to obtain a balance of nutrients from the air, water, and soil.

Not all soils are alike—there are different soils in different places. Forest soil is usually dark, damp, and contains a lot of humus. Soil rich in humus is able to hold a lot of water and contains an abundance of nutrients. This allows the growth of many different plants, which can then support different kinds of animals. In contrast, sandy soil drains water. It is typically found in drier areas like deserts or in some areas near lakes or ponds. Sandy soil is usually loose, dry, and light brown. There is less humus than in forest soil, which means fewer nutrients. Clay soils usually contain a high percentage of mineral in the soil, often causing clay soil to be dark red in color. Clay soil also holds a lot of water and tends to be thick and heavy when it is wet.

One of the best ways to learn about soil is to start a garden. To help make the garden as healthy as possible, it's important to learn as much as you can about the soil where the garden will grow and to make sure the soil has enough nutrients to help plants grow. The activities below have been designed to help you learn about the soil near your home and to get you started with a garden of your own!

THE "GROW A HOME GARDEN" FAMILY CHALLENGE

How much do you and your family already know about what gardens need to grow? Try to guess the answers to the questions below. You can play as a team or play against each other. Give yourself one point for every correct answer!

1. A good garden soil is said to be comprised of 50 percent organic material and 25 percent air pockets. Which of the following would make up the remaining 25 percent?
A. clay B. water C. worms D. mulch
2. Soils can come in many different colors. Which of the following is NOT a soil color?
A. black B. gray C. red D. orange.
3. What is another name for the layers within a soil bed?
A. transformations B. fractions C. wedges D. horizons

4. How many different kinds of soil have scientists identified?
A. 70 B. 700 C. 7,000 D. 70,000
5. Which soil particle can hold the most water?
A. clay B. silt C. sand

ACTIVITY 1: NOT ALL SOILS ARE CREATED EQUAL!

For some people, soil is just dirt. But, for plants, soil helps to provide important nutrients and a home that helps them grow. Soil is made up of a mixture of sand, silt, clay particles and decomposed plants, also called organic material. Some soil has more sand than clay. Other soil has more clay than silt. And different plants grow best in different types of soil. Taking a look at the soil around your home can help you decide which plants to grow in your garden. Although it's difficult to know how healthy a soil is from just a visual inspection, the percentages of soil particles can help us determine what types of plants might grow best in that particular soil.

HERE'S WHAT YOU NEED:

- Soil from at least two different areas around your home
- Three glass jars (jelly jars work well)
- Stirring sticks
- Clean water
- Measuring tape
- Calculator (optional)

HERE'S WHAT TO DO:

1. Dig up soil from two different areas around your home.
2. Place each soil sample in a separate glass jar. Fill each jar about a third of the way up.
3. Fill the third jar with clean water.
4. Add the water to each jar of soil until it is almost full.
5. Watch the mixture for a while. What do you see? What do you think causes this reaction?
6. Stir up both soil mixtures. Leave the jars for two or three hours until the water is clear.
7. You should notice different layers. Use the clues below to identify each layer.
 - Sand particles are biggest and weigh the most. So the bottom layer will be sand.
 - Silt particles are smaller than sand and weigh less so they are the next layer up from the sand.
 - Clay particles are smallest so they will be on top.
 - At the very top will be floating organic material that has not yet rotted.

“Grow a Home Garden” Family Challenge
Answer Key
1. B 2. D 3. D 4. D 5. A

8. In the space below, describe or draw what you see in each jar.

Jar 1

Jar 2

Similarities between both jars:

Differences between both jars:

9. Use a measuring tape to measure the height of the total soil and water and then the height of each layer. Divide the height of each layer by the total height of the soil and water to determine the percentage of each layer.
10. Finally, draw a bar graph or other illustration to represent the layers of each soil type.
11. Then, use the keys below to determine which soil will be best suited to grow your garden and which plants you might want to choose.

Type of Soil	Characteristics	What Grows Best?
Clay	Feels lumpy and is sticky when wet and hard when dry. Poor at draining and has few air spaces. If drainage is improved, plants will develop and grow well as clay soil can be rich in nutrients.	Perennials and shrubs such as Helen's Flower, Aster, Bergamot, Flowering Quince. Summer crop vegetables, fruit trees, ornamental trees and shrubs thrive on clay soils.
Sand	Sandy soil feels gritty. It drains easily and dries out fast. Sandy soil requires organic amendments such as glacial rock dust, greensand, kelp meal, or other organic fertilizer blends. It also benefits from mulching to help retain moisture.	Shrubs and bulbs such as tulips, sun roses, and hibiscus. Vegetable root crops like carrots, parsnips and potatoes favor sandy soils. Lettuce, strawberries, peppers, corn, squash, zucchini, collard greens and tomatoes are grown commercially in sandy soils.
Silt	Silty soil feels soft and soapy, holds moisture and is usually very rich in nutrients. This is a great soil for your garden if drainage is provided and managed. Mixing in composted organic matter is usually needed to improve drainage while adding nutrients.	Shrubs, climbers, grasses and perennials such as mahonia, New Zealand flax. Moisture-loving trees such as willow, birch, dogwood and cypress do well in silty soils. Most vegetable and fruit crops thrive in silty soils which have adequate drainage.

ACTIVITY 2: TAKE YOUR VITAMINS

The ideal mix of soil is called “sandy loam.” It is made up of approximately 40% sand, 40% silt, and 20% clay. But what can you do if your percentages don’t look like this? You have three choices. Which of the following sounds like the best approach?

- A. Plant your garden in whatever soil you have and cross your fingers.
- B. Give up gardening forever.
- C. Try to improve your soil.

If you answered C (of course you did!), there are some strategies you can use to make your soil better for growing plants.

Want to improve clay soil?

- Add organic matter like grass clippings, shredded leaves, or other compost. Two to three inches of organic matter should help.
- Build raised beds. Because clay does not drain well, raised beds will improve drainage. This could be a simple mound of soil or can be constructed from wood or brick.
- Perform a soil test. Your local cooperative extension office can assist you in analyzing your soil. If you are missing essential nutrients for plants, the soil analysis will help you determine what nutrients should be added to your soil.

Want to improve sandy soil?

- Work in three to four inches of organic matter such as well-rotted manure or finished compost. Mulch around your plants with leaves, wood chips, bark, hay or straw. Mulch retains moisture and cools the soil.
- Add at least two inches of organic matter each year.
- Grow cover crops or green manures.
- Perform a soil test. Your local cooperative extension office can assist you in analyzing your soil. If you are missing essential nutrients for plants, the soil analysis will help you determine what nutrients should be added to your soil.

Want to improve silty soil?

- Add at least one inch of organic matter each year.
- Concentrate on the top few inches of soil to avoid surface crusting.
- Consider constructing raised beds.
- Perform a soil test. Your local cooperative extension office can assist you in analyzing your soil. If you are missing essential nutrients for plants, the soil analysis will help you determine what nutrients should be added to your soil.

In the space below, write what your family plans to do to help make your garden soil as healthy as possible.

ACTIVITY 3: HOW DOES YOUR GARDEN GROW?

There are many great reasons to grow a home garden! Check off the ones that are important to your family. Then, follow the steps below to plan and plant your very own garden.

The _____ family wants to grow a home garden because we want to:

- | | |
|--|--|
| <input type="checkbox"/> Have fun | <input type="checkbox"/> Enjoy the outdoors |
| <input type="checkbox"/> Help the environment | <input type="checkbox"/> Learn more about soil and science |
| <input type="checkbox"/> Make our home beautiful | <input type="checkbox"/> Save money and natural resources |
| <input type="checkbox"/> Get exercise | <input type="checkbox"/> Grow food for our family or to donate |

Ready to get started? Here are some easy steps to help you and your family plan and plant your own garden.

1. Decide what type of garden you want to grow. Will it be a flower garden? A vegetable garden? A butterfly garden? Consider what you have learned about your soil as you make your decision. You can mix any of the above, but it's often good to start small and expand later. Make sure each family member gets a vote!
2. Pick a site. Many plants need about six hours of full sun each day. If your site is sunless, choose plants that like the shade. Try to pick a spot with the best type of soil. If you live in an apartment or don't have enough land, think about using containers to garden.
3. Clear the ground by digging out the sod.
4. As we learned above, many soils need some additional nutrients to get healthy. Help the soil with a 2-3 inch layer of compost or by adding fertilizer.
5. Decide what you will grow. Think about the plants that will grow best in your climate and with your type of soil.
6. Get the tools you will need. You can start with a shovel, hoe, and spade.
7. Plant!
8. Care for your plants. Make sure they are getting enough air, water, and sunshine. Weed often.

ADDITIONAL RESOURCES

Bureau of Land Management: Soil and Biological Communities- Just for Kids:

<http://www.blm.gov/nstc/soil/Kids/index.html>

National Gardening Association: <http://www.garden.org>

National Gardening Association: Kids Gardening: <http://www.kidsgardening.org>

Nutrients for Life Foundation: <http://www.nutrientsforlife.org>

Soil Science Education Home Page: <http://soils.gsfc.nasa.gov/>

USDA Natural Resources Conservation Service: Unlocking the Secrets in the Soil:

<http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/soils/health/>