



4-H PLANT SCIENCE ACTIVITY PAGE

Developed by **Frank Yancey**, Extension Agent, Lewis County

Beginning

Your 4-H PLANT SCIENCE Project

Plants and the soil in which they grow are very important to us. Plants can provide us with food, enjoyment and, most importantly, oxygen. Plants and soil are important natural resources. We are responsible for taking care of these resources. This 4-H project will help you learn about the exciting world of plants and soil so that you can help take care of them. Some of the skills you can learn and activities you can do in this project are listed below. Check your favorites. Then, work with your 4-H leader and parents to make a 4-H project plan of what you want to do and learn this year. Let's dig in!

- Learn to identify plants and their parts.
- Learn about soil layers and how they are different.
- Develop skills useful in gardening and soil conservation.
- Learn about the environmental factors that affect plant growth.
- Learn how to compost.
- Complete a service project using skills and knowledge you develop.
- Exhibit plants you grew at a 4-H project day or at the fair.
- Give a plant science demonstration during a 4-H club meeting.
- Learn about careers in plant and soil science.
- Other _____

A Worm's Eye View

Soil is the soft outer covering of the earth. It is one of our most important resources because it is necessary for plants to grow. It provides food for plants, and plants become food for humans and animals. Soil also stores much of the water that plants need.

Have you ever wondered where soil comes from or how long it takes for soil to form? Almost all soil starts as solid rock. Wind, running water, rain, earthquakes, landslides and other natural forces have changed rocks into soil. These changes started millions of years ago and are still happening today.



Soils are not the same everywhere. Some are wet and others are dry. They may be bright red, gray, yellow or black. Some are deep and others are shallow.

What kind of soil do you live on? Look in books or on the Internet to learn more about the soil in Tennessee. Find a hole or dig your own and look at the soil. Create a poster about what you learned and share it in a 4-H meeting.



Life Skill
Responsibility

Something is rotten!

How Compost Can Improve Your Soil

One great way to recycle garbage and improve your soil is through **composting**. Composting turns some types of waste into organic soil full of nutrients.

To begin composting, you will need some type of bin or an unused spot in your yard.

Add:

- Brown items—things rich in carbon such as leaves, wood chips, pine needles, bark and newspaper



- Green items—things rich in nitrogen such as grass clippings and kitchen scraps like fruit and vegetable peels, eggshells and coffee grounds

Don't add:

- Meat
- Diseased plant material
- Animal waste

The worms and bacteria will go to work and over time you will have a nutrient-rich soil that is great for growing plants.

Try this—What does a seed need to grow?

All seeds need oxygen, water and the right temperature to grow. Seeds sprout through a process called **germination**. Try this experiment to see how germination changes with light, water and/or temperature.

You will need:

- Several paper cups or pots filled with potting soil
- Bean or sunflower seed (at least 3 per container)



After planting the seed, place the containers in different locations. Try some in the light, some in the dark and some in a place that gets both light and dark. Make sure the locations have different temperatures, too, if possible. In each location, place two cups with seed. Water only one cup in each location. Watch the plants for a few weeks and record what happens. Share what you learn in a 4-H meeting.

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What Plants Need

You have noticed many types of plants around you. Flowers, shrubs, trees and grasses are around your home. Farmers grow food such as wheat, corn, tomatoes and apples. Cotton is used for clothes and trees are grown for shade, lumber and paper.

All plants need things such as sunlight, air, water and plant food (nutrients) to grow. Let's take a closer look at plants and light.



Green plants make their own food through **photosynthesis**. In this process, plants use energy from light to turn carbon dioxide into food for growth of stems, roots, fruits and seeds. Photosynthesis also produces the oxygen that we need to breathe.

Some plants need lots of light, but others need only dim light. The leaves of many plants turn toward light. In fact, some plants follow the sun from morning till night. When darkness comes, the leaves will turn to the east again as if waiting for the sun to rise again in the morning.

Unscramble the letters below to reveal the name of a plant that follows the sun.

R L N U W O F S E

Service Ideas

- Grow a garden and donate produce to a food bank.
- Compost to improve soil condition.
- Get involved in a garden or tree-planting project at school or in the community.
- Conduct an educational "show-and-tell" about plant science for younger 4-H'ers.

Additional Resources

Plants and soil are natural resources. Because we live on the earth, we are responsible for taking care of these resources. This activity sheet has given you the opportunity to explore things about plants and the soil to help you be responsible for the world around you. But this is just the beginning! Use the resources listed below to continue learning about plant science.

- School & public libraries
- Nurseries or botanical gardens
- Master Gardeners or garden clubs
- School science and agriculture teachers
- NRCS (Natural Resource Conservation Service) office
- 4-H project groups
- The 4-H plant science Web page:

<http://4h.tennessee.edu/projects/plantscience.htm>

*Reviewed by Gary Bates, Professor, and members of the state 4-H Youth Development staff
Edited by Lori Jean Mantooth, Extension Assistant, and Wanda Russell, Publications Editor*

Career Scavenger Hunt

Botanists are the scientists who study plants. Pedologists study soil. By asking others, researching on the Internet, or reading a book or magazine—search for a job that uses knowledge of plants and soil science. Here's what you are looking for:

1. Job Title _____
2. Job Description _____

3. Education Required _____

Plant Puzzle

Listed below are parts of a plant. Use information from books or the Internet to draw a plant and label the parts. Share your drawing with your 4-H club. Then, search for the words in the puzzle.

AXIL
 AXILLARY BUD
 COTYLEDON
 FLOWER
 INTERNODE
 LEAF
 NODE
 PETIOLE
 ROOT
 ROOT CAP
 STEM
 TAPROOT

P G A X I L P C J P D
 A L M B Y F P O E U R
 C E E S G R D T B A O
 T D Z A E W I Y F N O
 O L A Q F O R L J N T
 O A O S L A U E T M G
 R L T E L W L D Q C P
 F E Q L N N O O I U X
 M T I N T E R N O D E
 U X J T O O R P A T I
 A E D O N L H M M S Q

Dig Deeper

Find out what each of these parts does. Can you identify them on several different plants?



Don't forget to submit your project report to your 4-H leader.

Other 4-H Plant & Soil Science Activities

- 4-H public speaking contests
- 4-H demonstrations
- Fair exhibits

For more ideas, contact your 4-H office.

