Crops Container Experiment

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Name _____ Age: _____

Potted Container Experiment

What you need:

- Potted box container with 4 dividers
- Potting soil
- Crop Seeds or other plants – at least 6 plants, might have 12 -18 plants if desired. (You will want the same number of plants for each divider.)
- Materials you want to experiment with such as fertilizer, etc.
- Hole saw or drill and jig saw (may need adults supervision to run power tools)

Learning Objectives:

- Understand the functions & requirements of plants.
- Understand and practice the proper methods of caring for container plants in a landscape.
- Create an experimental design by performing at least 2 treatments.
- Interpret and analyze data collected from this experiment.

Step 1: Design your experimental treatments

Before you plant your container, you will need to determine what you'd like to experiment with and what kind of plants to plant. For example, you could select a plant variety that requires partial sun and one that requires full sun and see the difference, OR plant the same plants, but water them differently, fertilize them differently, etc. This is for you to determine what you'd like to learn.

Step 2: Prepare your container

Cut one or two ¼ inch holes in diameter in each divider, centered in the bottom of the container. These holes will allow for drainage.

Step 3: Planting the flowers/plants

Fill each "divider" half full of soil, tapping the container to get air pockets out. Arrange flowers in each divider as desired; fill the rest of the container with potting soil so the container is full of soil. Once you water the plants for the first time, some soil will sink and you might need to replenish it with more soil.

Step 4: Care for your plants

Be sure to water your plant once the soil dries out. You might need to fertilize a couple of times; if you choose to use fertilizer read the label directions on the fertilizer container. See more specific care instructions in the following sheets.

Name _____ Age: _____

Set Up Your Experiment

Go through the scientific method to determine what your experiment will be or what you will be testing.

The Scientific Process:

1. Ask a question.
    a. What is it you want to test?
2. Research what might happen.
3. Develop a hypothesis.
    a. After researching your question, write down what you think will happen based on what you know?
4. Test your hypothesis by conducting an experiment.
    a. Write down how you will conduct your experiment.
    b. What conditions need to be exactly the same to get your desired results? Note what your controlled variables, independent variables and dependent variables will be.
5. Analyze your data and draw a conclusion.
    a. Conclude what happened in your experiment and record your findings.

Complete the following as you set up and conduct your experiment.

1. What is your question/what do you want to test?

_____

_____

_____

2. Research what might happen. Record any notes here.

_____

_____

_____

3. Develop a hypothesis. What do you think will happen in your experiment?

_____

_____

4. Test your hypothesis by conducting an experiment. Fill in the following information to help you conduct your experiment.

Variables		
Independent Variable – what will you be changing in the experiment. (There should only be one item listed here.)	**Dependent Variables** – What will you be measuring or observing	**Controlled Variables** – What will you be keeping the same during the experiment

Your Hypothesis (Fill in the blanks with the appropriate information from your own experiment.)

If (I do this)… _____, then

(this) _____

_____

will happen.

5. Analyze your data and draw a conclusion. What happened with your experiment?

_____

_____

_____

_____

Observations

Write down your observations from your experiment on a weekly basis. Record such things as if the plant looks better or worse than when you planted it. Observe the leaves, soil, stem, and flower. Are the plants all healthy or are some healthier than others? Did you encounter any disease or pests?

Date	**Observations for Treatment #1**	**Observations for Treatment #2**	**Observations for Treatment #3** *(if applicable)*

Care tips for your Container

- ☼ Container grown plants must be watered and fertilized more than other garden plants because of their restricted root system.
- ☼ Plants should be fertilized every 2-3 weeks using a water-soluble fertilizer.
- ☼ Water thoroughly once daily or as needed; smaller containers need to be watered more frequently than larger ones.
- ☼ Water the container when the top ½ to 1 inch of soil becomes dry.
- ☼ Check the plants regularly for possible insect or disease damage.
- ☼ Put planter where it has the proper amount of sun/shade
- ☼ Now, sit back—see what happens!

Potential Insects

Some insects are beneficial. Bees and butterflies pollinate flowers. Many plants would not grow without insects to pollinate them.

Plants are attacked by many kinds of insect and related pests, usually causing aesthetic damage to the foliage or blooms. However, most plants will still provide an attractive appearance, particularly from a distance, in spite of insect attack. A couple of potential pests, especially in hot, dry conditions are mites and grasshoppers. Mites are tiny, but can be detected when the leaves appear to have a stippled-bleached effect and later cause the leaves to turn yellow, gray or bronze. You can tell if you have mites, by putting a piece of white paper under the leaves of the plant and shaking the plant. Some mites will fall onto the paper and you will see little dots on the paper.

Another pest that will feed on plants is the grasshopper. Grasshoppers feed on the leaves of flowers, eating the margins until there is little or no leaf tissue left. They can also eat large holes in the leaves.

Two-Spotted Mite (with magnifying glass)

Damage from a two-spotted spider mite

Grasshopper damage

Clear-winged grasshopper

Potential Diseases

Mid to late summer is the time diseases get a hold and become noticeable in gardens and landscapes. Methods for controlling diseases include selecting plants that are well adapted to the environment and resistant to plant diseases and pests. Our awareness of the importance of various cultural practices for preventing or controlling plant diseases as well as abiotic disorders has increased greatly in recent years. Especially in landscapes with an emphasis on reduced pesticide use, cultural practices are an extremely important and integral part of plant health management. Pesticides (primarily fungicides) may be an important component of disease management, but always follow label directions and adult supervision is needed.