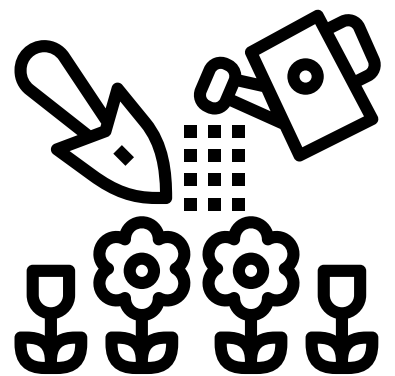


GARDEN ACTIVITY PACK

DIY fun using Smart Pots

COOKING
SCIENCE
ART



SCIENCE
EDITION



CONTAINER GARDEN SCIENCE EXPERIMENT



THE SCIENTIFIC METHOD

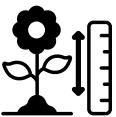
The scientific method is a process that is used to answer questions through experimentation and observation. This activity will guide you through conducting an experiment to discover the best container to use for your selected plants in your chosen garden location.

QUESTION

What type of garden pot or container will produce the largest and healthiest plants?

SIGNS OF A HEALTHY PLANT

The following characteristics are often signs that a plant is thriving:



Plants grow:

- Upwards, towards the light
- Consistently, without stunting
- Strong stems and stalks



Leaves have:

- Bright, even coloring
- No holes or spots
- No dry or wilted spots



Roots are:

- Firm and succulent
- White or tan
- Long, with many secondary/lateral roots



Harvests are:

- Proportionate to the health of the plant - the healthier the plant, the better the harvest!

In this experiment, we'll be evaluating the plant's size and health by 4 quantifiable measurements: plant height, leaf health, plant mass, and root length.



VARIABLES



Controlled variables

- Type & quantity of plant
- Type & amount of soil
- Sunlight
- Location

Controls are conditions and materials that are intentionally kept the same in order to more clearly understand the effect of the variables.

Independent variable

- Type of pot

The independent variable is what we change systematically in order to see what effect it has on the dependent variable.

Dependent variables

- Plant height
- Plant mass/weight
- Leaf & root health
- Harvests

Dependent variables are the characteristics observed and measured to determine the impact of the independent variable.

CONTAINER GARDEN SCIENCE EXPERIMENT



TYPES OF CONTAINERS

Find 3 different types of garden pots that have the same soil volume capacity - this is important!

Your container gardens should each be made of different materials such as:

- Smart Pot fabric grow bag
- Terra cotta
- Ceramic
- Plastic
- Metal
- Glass
- Wood



WHAT PLANT SHOULD YOU GROW?

Depending on the season, you will plant the same crop in all of your different containers. Plant either all seeds or the same sized seedlings/transplants. The following are recommendations for plants that are easy-to-grow in many locations, but be sure to check with local planting guides to make sure your choices are regionally climate and season appropriate.

SPRING

SUMMER

FALL

INDOOR



peas or dill



cherry tomatoes or basil



swiss chard or kale



green onions or beans

The plant I will grow for this experiment is:

Once a plant is chosen, use books, online resources or local garden experts to answer the following questions:

1. What are the preferred growing conditions of your plant?
2. Does it prefer sun or shade?
3. What kind of soil does your plant like?
4. How much space does your plant like to grow in?
5. How much water does your plant need?

RESEARCH



CONTAINER GARDEN SCIENCE EXPERIMENT

Based on your research, form a "hypothesis" or guess as to which container you think your plant will grow best in.



HYPOTHESIS



MATERIALS

- 3 different types of growing containers that have the same volume
- Labels for each pot
- Potting soil
- Seeds or transplants
- Watering can or spray bottle
- Ruler or tape measure
- Scale
- Observation worksheets



CONTAINER TYPE:

Write the container's material next to its ID letter.

A) _____

B) _____

C) _____



PROCEDURE

Data collection frequency: every _____ days # of days of experimentation: _____ End date: ____ / ____ / ____

1. Decide on the length of your experiment and the regular frequency of when you will record your observations.
2. Label each growing container with "A," "B," and "C" so that you can identify them.
3. Weigh out an equal amount of potting soil to fill each container with.
4. Add the soil to the pot and plant your seed or transplant.
5. Water each container as needed. The soil should stay moist (not too wet or dry!) at all times.
6. Record how water you gave each plant and any other observations.
7. Record the plant's height and leaf health at the decided frequency. Print out as many observation sheets as needed.
8. At the end of your experiment, weigh the plant's dry mass by carefully taking it out of the container and removing all of the soil. Record your results. *Do not harvest from the plant before the end of the experiment.
9. Your final measurement will be the plant's root length. Carefully unravel the roots and use a ruler or measuring tape to measure the length of the longest root. Record your results.
10. After all the data is entered into the "final results" page, determine whether your hypothesis was correct and reflect on your experiment in the "analysis, conclusion, and discussion" worksheet.

CONTAINER GARDEN SCIENCE EXPERIMENT

 **Smart Pot**
Patented Aeration Container

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Observations: Growing Period



height

Measure the height
of the plant at its
tallest point.



leaf health

Rate the health of the plant's leaves on
a scale of 1-5 and note any observations
related to the leaves.

1 = Very poor

5 = Excellent

ID

A

B

C

OBSERVATION #___

Date: ___ / ___ / ___

A

B

C

OBSERVATION #___

Date: ___ / ___ / ___

A

B

C

OBSERVATION #___

Date: ___ / ___ / ___

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Record every time you water the plants, how much you added, and any other observations.

[illegible]

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END OF EXPERIMENT - FINAL RESULTS

- After completing your data collection and observations for the growing period, follow the instructions for the height & leaves sections below.
- The end of experiment will be removing the plant from its container to measure the mass and root length. This will be the "harvest" of your plant and it will not be able to be re-planted.

PLANT QUALITIES	ID	FINAL OBSERVATIONS Date: ____ / ____ / ____
 height Record the TALLEST height observed for each plant (this may not be the final recording).	A	
	B	
	C	
 leaves Record the best score for the health of each plant's leaves.	A	
	B	
	C	
 mass Measure the total dry weight of each plant.	A	
	B	
	C	
 roots Measure the length of the longest root for each plant.	A	
	B	
	C	

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Analyze your final results.

Which containers
grew plants with
the largest
measurements?

Which container
needed the most
and least water?



ANALYSIS



CONCLUSION

Which container
garden grew the
largest plant?

Which container
grew the
healthiest plant?

What went well
with your
experiment?

What would you
change if you
were to do it
again?



DISCUSSION
