

Plant experiments (All 7)

Experiment 1: Do plants need light to grow?

Materials:

- Potted plant
- Tinfoil

Step 1

Place the potted plant in a sunny place.

Step 2

Cover one of the leaves completely with tinfoil to shield it from the light.

Step 3

Leave for two weeks. Remove the tinfoil. Compare the leaf with the uncovered leaves.

Activity: To show the effect of light on plant growth.

Materials:

- Cotton wool
- 3 Plastic cups
- Water
- Watercress seeds
- 2 Cardboard boxes

Step 1

Put a layer of cotton wool at the bottom of each of the cups.

Step 2

Add a little water to all 3 cups.

Step 3

Sprinkle the watercress seeds evenly over the cotton wool.

Step 4

Put 1st cup in a sunny place, and the 2nd cup under a cardboard box.

Step 5

Cut out several holes of the other cardboard box and place the 3rd cups under this box.

Step 6

Leave for several days and check daily that the cotton wool is still damp.

Observe and compare the growth of the 3 cups.

Explanation:

The seeds exposed to light should grow straight up. The seeds covered by the box with the hole in the side will have grown towards the hole, looking for the light. This is called phototropism. The seeds in the box with no light will be the smallest and less green. This activity shows the effect of light on plant growth.

Further idea: Repeat the process again, but in this case, cover one of the cups with a glass jar. This makes a 'green house'. Compare the growing of the seeds in the green house and those growing freely.

Experiment 2: To show how plants take up water from the soil

Materials:

- Different coloured food colouring
- 2 Plastic Bottles
- Jug of Water
- Scissors
- White carnations or celery sticks with leaves attached.

Instructions

An adult should help to make the plastic jar, as this could be dangerous.

Step 1

Cut off the top of the plastic bottle to make a plastic bottle jar.

Step 2

Fill the jar $\frac{1}{2}$ - $\frac{3}{4}$ with water. Pour food colouring and water into the each plastic jar.

Step 3

Add the food colourings to the water making the colour as strong as possible – the stronger the colour the better the result!

Step 4

Place the carnations into the jars.

Step 5

Leave to stand a few hours or overnight. What do you observe in the petals

Step 6

Observe what happens!

Do the petals change colour?

Optional step – An adult can carefully cut some of the stem in half and place one half in each coloured water.

Explanation: Water travels up from the root to the stem and leaves of a plant by a process called capillary action.

For a St. Patrick's day activity, use a white carnation with green and orange food colouring to make a green, white and orange flower. Split the stem, so that you have two legs, put one leg in the green dyed water, and the other in the orange dyed water.

Watch for your St Patricks day carnation to form!



Experiment 3: Bean Sprouting

Materials

- 6 Broad bean seeds:
- Large clear plastic bottle
- Paper towel
- Scissors
- Water
- Rulers

Instructions

An adult should help to make the plastic jar, as this could be dangerous.

Step 1

Cut off the top and the neck from the plastic bottle - 4 cm off the top of the remainder of the bottle to make a plastic ring and set aside.

Step 2

Put three sheets of paper towel together and fold in half.

Step 3

Place the folded towels inside the container around the edge.

Pour water into the container until it is about 3 cm deep.

Step 4

Push the plastic ring into the container to support the paper towels:

- 1 - Container
- 2 - Paper towels
- 3 - Plastic ring

Step 5

Push the beans in between the paper and the outside wall of the container.

Step 6

Leave the container in a warm place for 2-5 days. Ensure the paper towels stays moist.

Observe the bean sprouts! What do you notice?

What will you see?

In about a week the beans should begin to sprout. You will see the start of the root and stem coming out at first. If you keep observing, you will see that no matter how the beans face the roots will always head downwards and the stem always heads upwards. Aren't plants amazing?

Experiment 4: Are Leaves Really Green? (Links to natural dyes)

Extension of “how plants absorb water experiment”, get a closer look at how this happens!

This is one of the most fun hands-on plant science experiments for kids. Ask them if they really think leaves are green or if leaves have different colours hiding inside them.

Materials

- Pencil
- Cup
- Leaves
- Rubbing Alcohol
- Water
- Scissors
- Paper towels
- Pestle and mortar

Instructions

An adult should help with rubbing alcohol, as this could be dangerous.

Step 1

Take a leaf and pestle and mortar to make a paste.

Step 2

In the cup, mix equal parts water and rubbing alcohol – just enough to cover the leaf paste in the bottom of the cup.

Step 3

Mix the leaf paste with the solution and let your experiment sit overnight.

Step 4

Cut a long strip of kitchen paper towel with a scissors.

Step 5

Roll the strip of kitchen paper towel wrap around the middle of the pencil, so that it is leaving one end of paper one end of kitchen paper towel hanging loose.

Step 6

Place the pencil across the cup. Let the paper sit in the solution for 15 – 20 minutes. Then set the paper aside to dry.

What do you observe?

Now let the paper towel sit still. After a few hours you will notice different colour pigments on the paper towel strip. What colour pigments do you see?

Experiment 5: Transpiration in Living Leaves

Plants absorb water from the soil and release through the leaves into the atmosphere. This is called transpiration.

Materials:

- Transparent bags
- Pen
- Rubber band or twist tie
- Healthy outdoor plant with leaves - ideally in the sun

Instructions

Step 1

Select an outdoor plant with large green healthy leaves – ideally on a sunny day.

Step 2

Place a transparent bag completely over a sunny section of the plant, so several leaves are inside the bag sealing it with a rubber band.

Step 3

Look at the water cycle – make a prediction.

What do you think will happen in the bag.

Step 4

Check back in 2 hours to see if anything has happened in the bag, you might have to leave it for even longer!

Step 5

Record your findings.

What part of the water cycle does this experiment show?

Step 6

You can try this experiment on different plants.

Do some plants transpire more than others?

Does it matter if it is in the sun or in the shade?

Does the experiment work at night?

You could take this experiment further and compare how much water transpires from different types of leaves or at different times of day.



Experiment 6: Plant Vascular System in a Celery Stick

Food and water are carried through tubes in plants, similar to blood vessel in animal. This is called vascular system.

Materials:

- Celery stalk with leaves
- Jug of water
- Food colouring
- Plastic bottle
- Cup
- Scissors

Instructions

An adult should help to make the plastic jar, as this could be dangerous.

Step 1

Cut off the top of the plastic bottle to make a plastic jar.

Step 2

Take a stalk of celery and cut off a small slice at the bottom to remove any hardened tissue.

Step 3

Fill the plastic jar 1/3 full of water and enough food colouring to make a food colouring to make a strong concentration.

Step 4

Place the celery into the a container of solution

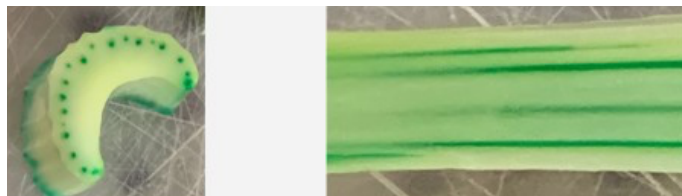
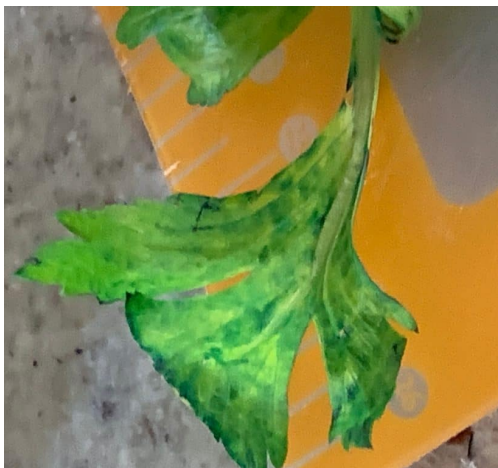
Step 5

After a few hours, remove the celery from the water.

Step 6

Cut off the bottom of the celery and examine the slice.

If you make a thin cut lengthwise along the celery stalk, you may be able to get another view of the vascular bundles.



Food colouring travels up the celery stalk and colours the celery leaf.

Within an hour or so, you may notice that the celery leaves have started to change colour as the coloured water makes its way up the stalk. It's easy to see the vascular bundles in the celery after the stalk has been placed in coloured water for a few hours.

Experiment 7: Grow some plant hair!

Growing watercress or mustard seeds from a potato is a quick way of growing your own. Watercress will grow within 5-10 days meaning you don't have to wait long for results.

Materials:

- 1 fresh potato
- Paints or felt-tip pens
- 1 packet of cress seeds
- Jug of water
- 2 balls of cotton wool

Instructions

An adult should help to make the plastic jar, as this could be dangerous. [Step 1](#)
Cut off and then scoop out the top of the potato to create a little hollow to allow the watercress to be grown in.

Step 2

Slice the bottom of the potato to create a flat surface so it can stand.

Step 3

Decorate your potato head to make them come alive.

Step 4

Dampen the cotton wool balls and place on the top of the potato.

Step 5

Sprinkle the watercress seeds on top of the cotton wool.

Step 6

Place in a warm place and check the cotton wool is damp each day.

Once the cress has grown enough it can be cut and eaten, it's yummy in an egg sandwich!

