

ACTIVITY

8

CHEMISTRY AT HOME

THE GREAT GREEN GROWING CHALLENGE



●●○ MEDIUM



6-12



30 MINS

*per activity plus
growing time*



1

Learn
how to
germinate
seeds

2

Find out
which
plants need
to grow

3

Discover how
fertilisers make
plants grow
faster

ENCOURAGING TOMORROW'S CHEMISTS TODAY

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THE GREAT GREEN GROWING CHALLENGE

Germination is the process where a seed begins to form a shoot and grows into a new young plant. Seeds need water, oxygen and warmth to germinate, but not light. Seeds contain a food store which the shoot uses for energy until it produces leaves.

Green leaves contain the chemical “chlorophyll”, which helps the plant make food in a process called “photosynthesis”. Plants use sunlight, carbon dioxide, water and nutrients from the soil to make the food they need to grow. At the same time, the plant releases oxygen gas into the air. All animals need oxygen to survive – so green plants are essential to support life on earth.

You will need

6 hard-boiled eggs
in their box

A packet of cress seeds

Cotton wool balls

A blunt knife

A teaspoon

A jug and water

A pair of scissors

Felt pens

Cling film

2 banana skins

Unused tea bags

Jam jar

Sieve



Safety

An adult should hard boil the eggs and remove the tops.

Take care using scissors.

Banana skin fertiliser may stain fabrics or furniture.

This activity should be supervised at all times.


Instructions

Activity 1 Germinate cress seeds

- Using scissors, cut the egg box into 6 “egg cups” to support the eggshells.
- Ask an adult to cut the top off each hard-boiled egg. Discard the egg tops.
- Using a teaspoon, carefully scoop out the inside of each egg, taking care not to break the shells.
- Fill the container to about 1 cm from the top with vegetable oil.
- Wet some cotton wool, gently shake off the excess water and carefully push some into each eggshell until each is filled to just below the rim.
- *Optional step* Using felt pens, decorate the eggshells with faces if desired. You could even dress each one up as a different scientist!
- Sprinkle half a teaspoon of cress seeds into each eggshell.
- Leave in a warm place to sprout, taking care to sprinkle with water every day to keep the cotton wool damp – shoots should appear after 2-3 days, and after 5 to 7 days there should be a good crop of cress.

Challenge 1

Create the perfect conditions to grow

 **WARNING** Some of your cress eggs may die!

Marie wants to find out which conditions plants need to grow.

Design Marie an experiment using 4 germinated cress eggs and observe the plants after a week. What has happened to each of the cress eggs? What do plants need to grow?

She could try:

- Not watering the cress egg
- Placing the cress egg in a dark cupboard or cardboard box
- Placing the cress egg in a sunny place
- Wrapping the cress egg in cling film (or a clear plastic bag) to make it airtight

Remember

Only change one condition at a time to make sure your experiment is a fair test.



Did you know?

A fertiliser is a substance that be added to soil to make plants grow faster. Fertilisers contain the elements nitrogen, phosphorous and potassium. In the past, farmers used materials such as seaweed, animal dung and bird droppings as fertilisers. Nowadays, chemists make fertilisers that have exactly the right balance of nutrients.

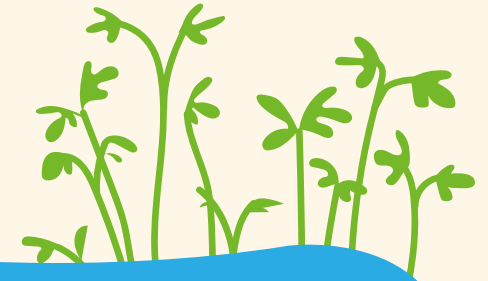
Challenge 2

Fertiliser Fun

Marie also wants to grow a supersized cress crop using fertilisers.

A homemade fertiliser can be made by soaking 2 banana skins (cut into small pieces with scissors) and unused tea bags in a jam jar of water overnight, and then sieving out the lumps.

Take 2 germinated cress eggs. Give one plain water, and the other your homemade fertiliser (or a commercially available liquid plant food). How tall can you grow each cress crop?



What's happening?

Once a seed is placed in a warm dark place, germination starts. As water soaks into the seed, this 'wakes up' special chemicals called enzymes. These enzymes turn the seed's food store into energy to grow roots and shoots until the plant can make its own energy from photosynthesis.