

Pollination

Key Stage 1 & 2

This resource complements the *Growing Food* activities and will help you understand what pollination is, and how it contributes to the life cycle of plants. It is based on a session we deliver in the Kitchen Garden at Chatsworth and we have revised it for you to try at home, in your kitchen or any outdoor space you have.

Parents & Teachers: You can find the relevant curriculum links at the end of the resource.



The Kitchen Garden at Chatsworth, where we engage schoolchildren in learning about growing food, pollination and the life cycle of plants.

What you will need:

- ❖ A flower - either in the garden, park, woodland or in a pot inside the house. This can be a wild flower or a flowering weed like a buttercup.
- ❖ A magnifying glass - this will be helpful if you have one, but you can do these activities without one. *Make sure you check with someone that it's ok to use these items before you start.*

Learning Outcomes All learners will:

- Be able to identify what a plant needs to grow and stay healthy (KS 1)
- Gain confidence in identifying where seeds or pollen can be found in different plants (KS 1)
- Develop an understanding of pollination and seed dispersal (KS1 & 2)
- Be able to describe the role of pollinators in the life cycle of a flowering plant (KS 2)

Activity One: What is Pollen and Pollination?

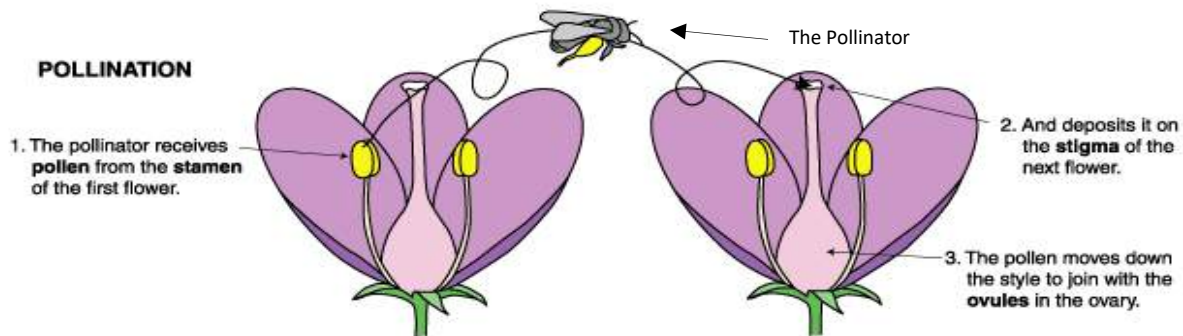
Pollen looks like tiny grains or dust, produced inside flowers to spread and grow new flowers. You might have seen pollen but not known what it was - sometimes it falls from flowers onto the table or it may have stuck to your clothes in the garden, and made you sneeze!

Pollination is the **process where pollen is transferred by pollinators from one flower to another**. When the pollen from different flowers touch, it starts to make new seeds that will spread and grow into new plants. We will look at what a pollinator is and how this happens a bit later.

Upper KS2: Pollen is collected from the **stamen**, the male part of one flower, and transferred to the **stigma**, the female part of another flower. When they touch, this starts the process of **fertilisation** (making a new seed) so the flowers can reproduce.

Pollination is a very important part of the life cycle of plants. They cannot produce fruit or seeds unless they are pollinated.

This diagram will help you understand how pollen travels from one flower to another:



Take a close look at your plant – you could use a magnifying glass if you have one.

Can you spot any of the flower parts shown in the picture above? Can you see a stamen covered in pollen grains? Does your flower have a stigma? (Stigma can be tricky to see in some flowers.)

Use this space to draw what you can see – you could even draw close up sections of the flower



Activity Two: How does Pollination happen?

Pollen can be moved from one plant to another in two main ways. By:

1. **Pollinators**
2. **Wind pollination**

☀ Pollinators

Can you circle the creatures you think are pollinators? Talk about your choices with an adult or partner.



There are different kinds of pollinators, including insects and birds. Insects find flowers by smelling their sweet nectar and seeing bright coloured flower petals. When they drink the nectar deep inside the flower, their bodies rub against the sticky pollen, carrying it to the next flower. The shape of a flower also attracts pollinating insects. Butterflies prefer flowers with flat petals for them to land and rest on.

Birds are also good pollinators, especially Hummingbirds and Honeyeaters. Long, tubular flowers attract Hummingbirds as their long beaks can easily fit into the flower when gathering nectar. Other birds love cup-shaped flowers with bright orange or red coloured petals.

Pollinators' bodies are good for their job in different ways. Birds have soft feathers and bees and bats have fuzzy fur which the pollen can easily stick to. Even butterfly wings are slightly fuzzy, like velvet – perfect for sticky pollen.

Honeybees are our most important pollinators. Can you think why this might be?

Think about what a bee looks like and how its body is perfect for the job.



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What shape and colour is your flower? Can you guess which pollinator might like to visit it? Try to spot some of these shapes when you see some flowers outside – you might even see a busy bee!

Did you know that some small animals are pollinators too? As well as moving pollen with their fur, animals eat fruit seeds that come out in their droppings. Some of these seeds will grow into a new plant – if they land in an environment that suits them. Field mice and bats are good pollinators and they are especially busy in the night while you are fast asleep.

♣ **Fun Fact:** The glass house at Chatsworth grows an unusual plant called the *Night Flowering Cactus*. This produces big, very strange looking flowers that only open at night. They have a strong smell and rely on bats to pollinate them. After it has flowered once, it closes up in the morning, then withers and dies. The bats have to be quick to get the tasty nectar while they can.



⚙ Wind Pollination

Pollination can also happen with the help of the wind. Pollen is very light and can travel for long distances on the wind. Wind-blown pollen or seeds are normally dry and dust-like. Wind-pollinated plants are often plain, with less colourful or fragrant flowers. This is because they don't need to attract insects or animals.



Take a look at the images above. Both are photographs of pollen dust bursting from plants. With a gentle breeze, the pollen dust is carried through the air, until some of it meets another plant.

Many trees and grasses rely on wind for pollination, but we also help with this kind of pollination if we are gardening, or playing outside near grass or flowers. If you suffer from hay fever or find yourself sneezing when you're outside, it is because there is pollen in the air. The amount of pollen in the air can be measured by a pollen count – this is based on a measurement of the number of grains in a cubic metre of air.

Some plants also use the wind to help spread their seeds after pollination has happened. This is seed dispersal. **Seed dispersal** is the spread or transport of seeds away from the parent plant.

Here are two pictures of seeds that we see quite often. In the spaces below, can you explain why their shape or structure is perfect for their job?

Sycamore Tree seed pods



Dandelion flower head



⚙ Self-Pollination

Some plants do not need help from insects, animals or the wind. They self-pollinate: pollen transfers inside the same flower or plant and does not need help from a pollinator. Like wind-pollinated plants, they do not need to be colourful. They can save energy, as they do not need to make nectar to attract pollinators. Sunflowers, tomatoes & potatoes pollinate themselves. Like other self-pollinating plants, this might be because they naturally grow in areas where there is no wind or other pollinators around. They have adapted to their environment to survive.

If you have enjoyed this resource and would like to know more about how edible plants grow, visit our website and download our Growing Food resource.

Curriculum links for parents and teachers:

| Science | Art |
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| <p>KS1</p> <p>identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other</p> <p>Describe how animals, insects and birds obtain their food from plants.</p> <p>Find out and describe how animals, insects and birds contribute to the life cycle of plants.</p> | <p>KS1</p> <p>Use drawing to record ideas and imagination</p> |
| <p>KS2</p> <p>Identify and describe the functions of different parts of flowering plants.</p> <p>Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</p> <p>Use the local environment to observe how different plants grow.</p> <p>Be introduced to the requirements of plants for germination, growth and survival, as well as to the processes of reproduction and growth in plants.</p> | <p>KS2</p> <p>Use drawing to record observations and use them to review and revisit ideas.</p> |

Here are the answers to some of the activities:

Circle the pollinators



Here are some interesting facts to share with your child about why honeybees are important pollinators:

- Bees are especially hairy and have branched bristles called *pollen baskets* on their legs. This means that they can collect a lot more pollen than other insects.
- Bees pollinate around 80% of wildflowers in Europe, so our countryside would be far less interesting and beautiful without them.
- Thanks to bees we can enjoy a range of foods, including their delicious honey.
- More than 90% of crops around the world are visited by bees.
- Bees gather pollen as food for their young. So they need to visit more flowers more frequently than any other pollinating creature.
- Some bee species are specially developed to pollinate particular plants and without them those plants would not continue their life cycle.

Sycamore seed pods – The seeds have developed large wings (with a big surface area) which catches the wind and blows from the tree then spins through the air like mini helicopters.

Dandelion – Each seed is attached to light and feathery bristle (called pappus) – with lots of tiny hairs on the end. These float easily in the wind and can be carried for long distances.