

# PLANTS: KEY STAGE 1

## LINKS TO NATIONAL CURRICULUM

### Science

- Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees (Year 1, Plants).
- Identify and describe the basic structure of a variety of common flowering plants, including trees (Year 1, Plants).
- Identify and name a number of plants and animals in their habitats, including micro-habitats (Year 2, Living things and their habitats).
- Observe and describe how seeds and bulbs grow into mature plants (Year 2, Plants).
- Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy (Year 2, Plants).
- Performing simple tests, identifying and classifying, gathering and recording data to help in answering questions (Years 1 & 2, Working scientifically).

## KEY LEARNING OBJECTIVES

1. To describe how seeds and bulbs grow.
2. To understand what plants need to grow and stay healthy.
3. To understand the basic structure of plants.
4. To identify, name and describe a variety of common wild and garden plants.
5. To identify, name and describe a range of deciduous and evergreen trees.

## Notes to Teachers

- Activities given are suggestions only. The main purpose of the lesson plans and PowerPoint presentation is to provide key information and visual aids for teachers to adapt to their needs.
- The PowerPoint presentation runs alongside the plans and all slides are referred to in the lesson plans. Please feel free to modify the presentation by adding your own slides or deleting those you don't need.
- In order that children can attempt to identify the plant shown on a slide, the name will not appear until the slide is clicked a second time.
- **There is a wealth of fact sheets and other downloadable publications on the YPTE website. These will provide additional information if you wish to focus on a particular topic and also enable children to carry out their own research.**

# HOW DO PLANTS GROW?

## SUGGESTED STARTER ACTIVITY

**Slide 4:** Before beginning on any practical activities, it is a good idea to discuss plant safety with the children.

### Plant Safety for Children

- Always wash your hands after handling plants, soils, compost etc.
- Remember that plants can be poisonous or cause allergic reactions in some people.
- NEVER eat plants found in the wild or your school grounds, unless you have been given instructions by a teacher that you may do so.
- Try to avoid pulling up a growing plant.

### Slide 4: Growing Seedlings

It is a good idea to plant seedlings right at the start of the topic, to allow enough time for them to grow.

#### You will need:

A pot for each child (could be washed yoghurt pots, egg boxes or cylinders made from several layers of newspaper and placed in a seed tray).

Seeds e.g. sunflowers

Compost

Water

Spoons (may be easier for smaller hands) or trowels

Tablecloth/sheet

Gardening/disposable gloves

Show the children a variety of seeds and bulbs - they all look very different.

Ask them what the seeds and bulbs need to germinate and what they will need to keep growing healthily.

1. Set out a sheet or tablecloth under the planting area to catch spills of compost and reduce mess.

2. Ask the children to fill their pot with compost. It is a good idea to let the children water the compost before they add seeds or the seeds may get washed away by enthusiastic watering!
3. Encourage the children to read the information on the back of the seed packets as they give advice on the conditions best suited to the plants.
4. Help the children count out the seeds and place the right number in each pot.
5. Ask the children to write their own seed labels.
6. Over the next few weeks the children could be responsible for looking after their own seeds.
7. They should record the changes they observe on an observation sheet (see below) e.g. first root appears, shoot appears, the height, colour of seedling.
8. This activity can form the basis for various discussions e.g. how should they care for their seedlings? Have any seedlings died and if so, why? If seedlings are wilting, how can they be revived?

## TEACHER INPUT

### KEY WORDS

**Germinate** - to start growing.

**Seedling** - a young plant grown from seed.

**Shoot** - new growth from seed germination that grows upward, where leaves will develop.

Using the sunflower as an example, we can show what happens to all plants from the time the seed is planted until they die. If the children have planted their own sunflower seeds, they will already have observed the early stages of growth.

**Slide 5:** the sunflower seeds are planted.

**Slide 6:** the seed begins to germinate. This slide shows the stages of germination, from planting the seed to it flowering.

**Slide 7:** The roots begin to grow down and the **shoot** grows up.

**Slides 8 & 9:** After about a week, the seed begins to grow into a plant - it is now called a **seedling**. The plant grows taller and the leaves become bigger.

**Slide 10:** After about 3 weeks, the seedling turns into a flower and then continues to grow even taller.

**Slide 11:** When the weather becomes colder, the sunflower starts to die. The flower will turn brown and the petals will eventually fall off.

**Slides 12 & 13:** When the flower has completely died, the seeds fall out of the dead sunflower and onto the soil. They will then replant themselves and when the summer begins again, the seeds start the cycle all over again and become new sunflowers.

## **SUGGESTED ACTIVITIES**

### **Sequencing Game**

Ask the children to draw each stage of plant growth (using the photos on the slides to help). Their pictures could be cut around and mounted onto cards. They can then play a sequencing game with each other's cards.

### **Sunflower Growing Competition**

In the summer, the children could be challenged to grow their own sunflower, either at home or in school. A competition could be held to see who can grow the tallest sunflower. This could also be part of a sponsored fundraiser for a good cause.

## 2. WHAT DO PLANTS NEED TO GROW?

### SUGGESTED STARTER ACTIVITIES

If possible, it is useful for the children to **compare a real plant and an artificial plant**:

How can they tell that one is living and one is not?

Do they look different?

Do they have different needs?

Ask them what they think a plant needs to grow and stay healthy and record their suggestions in a **mind map** on the board.

### TEACHER INPUT

**Slide 14:** Plants need the right amount of water, sunlight and food, as well as a suitable temperature, to be healthy:

**Slide 15: Water** - a plant that is not watered will have a weak stem and dried up leaves; it will eventually die. **Slide 16** shows how a plant will wilt if it is not given enough water. But too much water can also cause plants to die.

**Slide 17: Sunlight** - the plant's leaves use light from the sun, along with carbon dioxide from the air and water to make their own food. This process is called **photosynthesis**.

**Slide 18: Suitable temperature** - plants will only grow well in the right conditions. If the temperature is too hot or too cold, this may affect how the plant grows.

**Slide 19: Food/nutrients** - plants need the minerals found in soil for healthy growth; these are taken up through the roots.

### SUGGESTED ACTIVITY

#### Cress Experiment

**Slide 20:** Cress is quick and reliable to germinate, so a good choice for investigations. White mustard seeds could also be used.

What you will need:

4 growing containers e.g. egg shells, egg box, empty yoghurt pots

Cotton wool

Cress seeds

Observation sheets to record findings (see below)

1. Ask the children how they would go about proving that plants need **water** to grow. Can they devise a simple experiment? Hopefully they will suggest carrying out a test in which some plants are watered and some are not.
2. Place cotton wool in the bottom of the growing containers (one wet, the other dry). Leave a 3cm gap between the cotton wool and the top of the growing container. Sprinkle the cress seeds on top of the cotton wool and press down gently with a finger.
3. The children should place their growing containers on a window sill or in a light place. One should be clearly labelled "water" and the other "do not water".
4. The experiment should be carried out for a week. At the end of the week, the children should describe the differences between the two containers, recording the findings on their observation charts. Can they explain the results?
5. Now ask the children for ideas on how they could go about testing whether plants need **light** to grow.
6. One container of seedlings will need to be placed in a dark place e.g. in a cupboard and the other in a light area e.g. near a window.
7. Ask the children whether they think the plants should be watered. Explain that the only way of making the test fair is to ensure that both containers of seedlings are given the same amount of water.
8. The children should check after 3 days, a week and if necessary two weeks and identify the differences between the two containers. The findings should be recorded on their observation sheet and the results discussed as a class.
9. The children could write their experiment up, perhaps using a writing frame (see below for an example) to help structure their work.

## PLANT GROWTH OBSERVATION TABLE

Date	Description	Drawing	Measurement

## CRESS INVESTIGATION: WRITING FRAME

I am trying to find out

I predict that

This is because

This is what I did

It was a fair test because

This is what happened

I think this happened because

### 3. WHAT IS THE BASIC STRUCTURE OF A PLANT?

#### SUGGESTED STARTER ACTIVITIES

Question and answer to find out what they know about the parts of a plant. Can they try and draw a plant - what parts do they already know?

**Slide 21:** If you can find a flowering plant that needs repotting, you could take it out of the pot and show the children the roots and other parts of the plant - can they identify and name them?

#### TEACHER INPUT

##### Key Words

**Plant** - a living thing that grows in the ground, usually has leaves or flowers, and needs sun and water to survive.

**Photosynthesis** - the process by which a green plant turns water and carbon dioxide into food when the plant is exposed to light.

**Pollination** - insects, birds and the wind take pollen between flowering plants, which means the plants can make seeds and reproduce (have babies!).

Plant structure can be simplified as follows:

**Slide 22:** **Roots** - they anchor a plant in the soil and gather water and nutrients.

**Slide 23:** **Stem** - the rigid mast of the plant to which the leaves, flowers and roots are attached. Mineral salts and water are transported from the roots to other parts of the plant.

**Slides 24 & 25 :** **Leaf** - the main part is the leaf blade, often joined to the stem by a stalk. The leaf is where the plant makes its food from sunlight (**photosynthesis**).

**Slide 26 :** **Flower** - the part of the plant that attracts animals such as bees to **pollinate** and where seeds are made.

**Slide 27** : Can the children fill in the labels on the plant structure drawing?  
They could make their own labelled drawing.

## **SUGGESTED ACTIVITIES**

### **Create a Plant**

Using a variety of materials, ask the children to create their own plant. It should have the four main parts of a plant.

Ideas for materials:

**Stem** - cardboard tube from foil or cling film roll, straws

**Roots** - long pipe cleaners, wool, string

**Flower** - cake cases, milk bottle tops, paper plates

**Leaves** - card/paper

### **Compare Plants**

If possible, the children could bring in a plant from home. Or you could use the plants growing in the school grounds. Ask the children to look closely at the plants, perhaps using magnifying glasses, and compare the following:

- the size of the plant
- the size, shape and colour of the leaves
- the size, shape and colour of the flower, petals etc.

They should conclude that whilst plants can look very different, they have the same basic structure. Looking at the differences between plants will help the children when they come to identify them.

## 4. IDENTIFYING COMMON WILD AND GARDEN PLANTS

### SUGGESTED STARTER ACTIVITIES

How many plants, flowers and trees can the children name that they have seen in their gardens, school grounds, park, countryside etc? Produce a mind map with all their ideas on the board.

You could ask the children to choose a flowering plant they have in their garden or that they see on the way to school/at their park etc. Can they do the following:

- Make a coloured sketch of it and label the parts of the plant they have learned.
- Write a short paragraph describing their plant - height, colour/size/shape of flower, where it grows etc.
- Use the internet or books to try and identify the plant.

### TEACHER INPUT

Below are some of the most common garden and wild flowers that the children will be able to see around them.. They will enjoy identifying many of these plants themselves, so the name label will not appear on the slide until the second click.

#### **Slide 28: Stinging Nettle**

The whole plant is covered in stinging hairs - this is an effective way to avoid being eaten and also makes patches of stinging nettles a haven for caterpillars and other insects. Cooking destroys the venom and can produce a tasty vegetable or nutritious soup - full of iron and vitamin C.

#### **Slide 29: Dock**

Dock grows all over the UK and flower spikes appear between June and October. It is well known to most of us as a herbal remedy for nettle stings, but there are differing opinions as to whether it really works.

#### **Slide 30: Lesser Celandine**

One of the first plants to flower in spring. A member of the buttercup family but lesser celandines have more and thinner petals than a buttercup.

#### **Slide 31: Primrose**

One of the first signs of spring - can flower as early as December and all through the spring. They favour woodland clearings, hedgerows and grassland.

**Slide 32: Cow Parsley**

Grows rapidly in summer and likes shady habitats, especially along roadside verges and hedgerows. When crushed between your fingers, the leaves produce a strong smell. A member of the carrot family!

**Slide 33: Herb Robert**

Found in a variety of habitats, mainly between May and September. 5 petalled pink flowers with reddish stems. Leaves can smell unpleasant.

**Slide 34: Speedwell**

A wildflower to "speed you well". Common on roadside verges and garden lawns. Years ago, travellers appreciated the bright blue petals and in Ireland they were sewn into clothes as a charm to protect against accidents.

**Slide 35: Forget Me Not**

A pretty plant with bright blue flowers. Found in woodlands and gardens, flowers from April to June.

**Slide 36: Cowslip**

Spring flowering plants, once more common than they are today. The bunched arrangement of the nodding flowers earned it local names such as "bunch of keys".

**Slide 37: Dandelion**

Children have helped dandelions become one of Britain's most common weeds. Blowing the seed heads to "tell the time" is a very effective way of dispersing the seeds. But they were not always seen as weeds: in Victorian times they were eaten by the wealthy in sandwiches and salads. Even today dandelions are used as a herbal remedy and the flowers can be made into wine.

**Slide 38: Ivy Leafed Toadflax**

Often grows in rock and wall crevices. It has a very clever seed planting mechanism - the flowers turn their heads to the sun until fertilised and then they turn towards the wall on which they're growing. This means the seeds are pushed into the dark cracks in the rock walls where they like to grow.

**Slide 39: Bluebell**

Member of the lily family. Bluebells have a clever way of surviving under the dense shade of woodland - the green leaves emerge early in the year, long before the leaves of the trees have opened. This means they do most of their growing when there is plenty of light and nutrients are then stored in their bulbs.

**Slide 40: Snowdrop**

One of the earliest bulbs to flower from January to March, when the weather is still cold. People often look forward to seeing snowdrops grow as they signify that the long winter is coming to an end and that spring is on its way.

**Slide 41: Red Campion**

Splashes of pink found on rural roadside verges in late spring and summer. The flowers open up during the daylight to attract butterflies and bees.

## SUGGESTED ACTIVITIES

**Local Walk**

If possible, go out into the school grounds or local area to search for plants. Look in different habitats and ask questions e.g. in a dry area, why are there so few plants growing?

Look for signs that plants have been eaten by animals. Why are plants important to animals?

**Identification Task**

Please see following page for a wild flower and plant hunt sheet. It includes some of the most commonly found wild flowers. Please note that there is also a teacher copy with labels alongside the photos. It would be useful to take a magnifying glass to use when identifying flowers and -plants.

The Woodland Trust has a wonderful range of resources on its Nature Detectives website. You will find more plant spotter sheets here:

[http://www.naturedetectives.org.uk/packs/pack\\_spotting.htm](http://www.naturedetectives.org.uk/packs/pack_spotting.htm)

**School Garden**

If possible, can the children plant flowers/vegetables and watch them grow. They could keep a diary or record how plants change over time e.g. buds opening.

# DECIDUOUS & EVERGREEN TREES

## SUGGESTED STARTER ACTIVITY

### Tree Structure

Ask the children to draw a tree and label the parts they already know. They may need a few questions to prompt them:

Do trees have the same parts as other plants or are they different?

Are their roots different? How?

**Slide 42:** When the children have drawn their own pictures, show them this simple tree structure diagram - can they put the labels in the correct places?

## TEACHER INPUT

### KEY WORDS

**Deciduous Trees** - lose all of their leaves for part of the year. In cold climates this happens during the autumn, so trees are bare throughout the winter.

**Evergreen Trees** - don't lose all their leaves at the same time, they always have some foliage. They do lose their leaves a little at a time with new ones growing in to replace the old, but they are never completely without leaves.

**Photosynthesis** - the process whereby a tree's leaves use light from the sun, along with carbon dioxide from the air and water, to make their own food for the tree.

**Slides 43 & 44:** Comparison of how **deciduous** and **evergreen** trees change through the seasons.

**Slide 45:** **Roots** grow into the soil as they do on all plants. But tree roots are more likely to be seen above ground.

**Slide 46 :** The **trunk** is the big, thick stem of the tree.

**Slide 47:** **Branches** are the long arms that come of the trunk of a tree.

**Slide 48:** **Leaves** are the part of the tree that catch the most sunlight and where **photosynthesis** takes place.

**Slide 49:** Not all trees have colourful flowers. But some, like the cherry tree, have lots and lots of flowers. Another word for flowers on a tree is **blossom**.

Below are some of the UK's most common deciduous and evergreen trees:

## **Deciduous Trees**

### **Slide 50: Oak**

The most common tree species in the UK and supports more life forms than any other natives trees.

Grow up to 20-40m tall.

Leaf burst occurs mid May. The Oak has an open canopy that allows light to reach the woodland floor, allowing bluebells and primroses to grow below.

Fruit is the acorn - a rich food source eaten by many wild creatures such as jays, mice, squirrels, badgers and deer. Acorns are not produced until the tree is at least 40 years old.

Oak trees host hundreds of species of insects, supplying many British birds with an important food source.

### **Slide 51: Ash**

3<sup>rd</sup> most common tree in Britain.

Can grow to a height of 35m and can live for 400 years.

Leaves can move in the direction of sunlight and sometimes the whole crown of the tree may lean in the direction of the sun.

Once the female flowers are **pollinated** by the wind, they develop into winged fruit or "keys" in late summer and autumn. These fall from the tree in winter and early spring and are dispersed by birds and mammals.

### **Slide 52: Beech**

Can grow to over 40m and live for hundreds of years.

Dense canopy so beech woodland is shady. This means only shade tolerant plants can survive under its canopy.

### **Slide 53: Hawthorn**

Can reach 15m.

Also known as the May tree as this is the month it flowers.

Can support more than 300 insects and the dense thorny foliage makes it a good nesting shelter for birds.

### **Slide 54: Hazel**

Can reach 12m.

The yellow catkins appear before the leaves and hang in clusters from mid-February.

Branches are bendy in spring and can actually be tied in a knot without breaking. Hazel nuts are eaten by many animals and birds.

### **Slide 55: Horse Chestnut**

Grow to around 28m.

Once **pollinated** by insects, the flowers turn into shiny conkers inside a spiky green husk. These fall in autumn and are eaten by deer and other mammals - as well as being played with by us!

The flowers are a rich source of nectar and pollen to insects, especially bees.

## **Evergreen Trees**

### **Slide 56: Holly**

An evergreen shrub which can grow up to 15m tall and live for 300 years.

Provides dense cover and good nesting for birds.

Berries are an important source of food for birds in winter and eaten by small mammals such as dormice.

Used to decorate our homes and make wreaths at Christmas time.

### **Slide 57: Scots Pine**

An evergreen conifer, which can grow to 35m and live for 700 years.

Needle like leaves are blue-green in colour and slightly twisted.

After being **pollinated** by wind, female flowers turn into pine cones.

## **SUGGESTED ACTIVITIES**

### **Tree Identification**

As a homework, the children could identify as many trees as they can - in their gardens, the park, on their way to school etc. Perhaps they could take photographs of them or sketch them. The Woodland Trust's Nature Detectives website has a range of tree identification tools to help:

[www.naturedetectives.org.uk/packs/trees.htm](http://www.naturedetectives.org.uk/packs/trees.htm)

### **Tree Diary**

Ask the children to choose a tree that they see often - in their garden, in the school grounds, on the way to school, at the park etc.

Can they keep a diary to show how the tree changes over the seasons?

Can they see any signs of creatures that rely on the tree - either for food or shelter?

## **Tree Art**

Challenge the children to produce a painting/sketch/collage/model etc that celebrates the beauty of our trees.