Year 1 Plants

National Curriculum Objectives:

- identify and name a variety of common wild and garden plants, including deciduous and evergreen trees
- identify and describe the basic structure of a variety of common flowering plants, including trees.

Pupils should use the local environment throughout the year to explore and answer questions about plants growing in their habitat. Where possible, they should observe the growth of flowers and vegetables that they have planted. They should become familiar with common names of flowers, examples of deciduous and evergreen trees, and plant structures (including leaves, flowers (blossom), petals, fruit, roots, bulb, seed, trunk, branches, stem).
Pupils might work scientifically by: observing closely, perhaps using magnifying glasses, and comparing and contrasting familiar plants; describing how they were able to identify and group them, and drawing diagrams showing the parts of different plants including trees. Pupils might keep records of how plants have changed over time, for example the leaves falling off trees and buds opening; and compare and contrast what they have found out about different plants.

Killer Facts:

- Plants are living things
- Plants grow from seeds and bulbs
- Deciduous trees shed their leaves every year whilst evergreen trees do not shed their leaves and stay green all year.
- Plants change over time

Prior EYFS Learning	Where do plants come from?	What parts of a plant can you see?	How do plants change?	Key Vocabulary
- To understand what it means to grow and change - Make observations about what they can see with living things, including plants - Talk about the features of the environment around them	Provide a range of seeds, bulbs and objects that look like these. Children predict what they think might be real seeds and bulbs and then plan how they could check. Plant a seed in a jar so it is possible to see it germinate. Make predictions about what they might see as it grows. As it germinates children can observe, describe, and predict what they think each bit emerging from the seed. Continue observing and describing over a few weeks and refine their ideas. Provide a range of plants and discuss which could be garden plants and which might be wild. Examine, draw and taste a range of fruit and vegetables that might grow in a garden. Create observational drawings and label these.	Find flowering plants and use magnifying glasses to make close observations of what they can see. Sketch and take photographs of what they can see. Which are the most common plant types in school? Record data using tally charts. Create models of a flowering plant using a range of art/modelling materials and label. Take and group photographs of different stems/roots/petals/leaves in the environment. Look at a range of different trees and create bark rubbings. Look at a range of leaves from these trees and cerate rubbings of these. Which tree has the biggest leaves?	After planting their own seeds make predictions and observations: Which way will a stem and roots grow? If a seed is planted upside down, will this change the way the roots grow? Do all plants have leaves? Discuss how they could find out – use this to discuss leaves during the seasons. Discuss the differences between evergreen and deciduous trees and create pieces of art to reflect this.	leaves blossom flower petals fruit roots buds bulb seeds trunk branches stem evergreen deciduous wild plants garden plants

In Year 2:

- Observe and describe how seeds and bulbs grow into mature plants.
- Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.

Year 2 Plants

National Curriculum Objectives:

- observe and describe how seeds and bulbs grow into mature plants
- find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.

Pupils should use the local environment throughout the year to observe how different plants grow. Pupils should be introduced to the requirements of plants for germination, growth and survival, as well as to the processes of reproduction and growth in plants.
Note: Seeds and bulbs need water to grow but most do not need light; seeds and bulbs have a store of food inside them.
Pupils might work scientifically by: observing and recording, with some accuracy, the growth of a variety of plants as they change over time from a seed or bulb, or observing similar plants at different stages of growth; setting up a comparative test to show that plants need light and water to stay healthy.

Killer Facts:

- Most plants germinate from seeds and bulbs
- Water and warmth are required for most plants to survive.
- Most seeds and bulbs do not need light to survive but it can change growth.
- Flowering plants make seeds for new plants to grow.

Prior Year 1 Learning

- identify and name a variety of common wild and garden plants, including deciduous and evergreen trees
- identify and describe the basic structure of a variety of common flowering plants, including trees

How can we grow a plant?

Which is the odd one out? Can children identify that one has not begun growing yet?

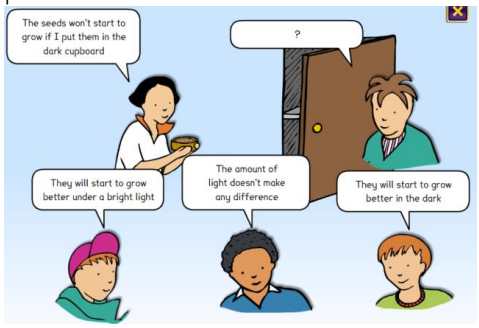
Use quick growing plants like mustard, cress, fast growing grass and beans to test if light, water and warmth are needed.
What are the perfect growing conditions?

Investigate hydroponics - if plants need water, can we grow them in water but with no soil?
Let them grow cress in water and on wet cotton wool and examine the differences.
Observe changes when allowing bulbs/cuttings to grow in a jar of water and allow children to make predictions.

How do plants survive?

Plant seeds in a range of contrasting locations so that they can be compared over time. Explain, model and label diagrams of the differences.

Use concept cartoon to discuss and make predictions.



Reflect upon results, drawing conclusions about what they found. Children could then apply this to the outside world – where/which times of year will plants grow best in the school grounds?

Will they grow: behind a shed? In the winter? When bulbs are upside down?

How do we make a new plant?

Mature plants often have seeds. Can the children identify some of the seeds on the plants? What do they notice when they look at a range of seeds with a magnifying glass?

Locate the seeds on a range of flowers like sunflowers and poppies. These can be bought and tasted (if appropriate) by children.
Do all plants produce seeds?

Explore the fact that some plants die after producing the seeds sunflowers) and some live on and continue to produce more seeds every year (trees). Can they group plants and discuss any similarities?

Key Vocabulary

seeds*
bulbs*
roots*
stem*
leaves*
flower*
predict
measure
diagram
observation
growth
temperature
compare
record
comparative tests
life cycle
germinate
hydroponics

prior learning*

In Year 3:

- identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers
- explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant
- investigate the way in which water is transported within plants
- explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.

Year 3 Plants

National Curriculum Objectives:

- identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers
- explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant
- investigate the way in which water is transported within plants
- explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.

Pupils should be introduced to the relationship between structure and function: the idea that every part has a job to do. They should explore questions that focus on the role of the roots and stem in nutrition and support, leaves for nutrition and flowers for reproduction.
Note: Pupils can be introduced to the idea that plants can make their own food, but at this stage they do not need to understand how this happens.
Pupils might work scientifically by: comparing the effect of different factors on plant growth, for example, the amount of light, the amount of fertiliser; discovering how seeds are formed by observing the different stages of plant life cycles over a period of time; looking for patterns in the structure of fruits that relate to how the seeds are dispersed. They might observe how water is transported in plants, for example, by putting cut, white carnations into coloured water and observing how water travels up the stem to the flowers.

Killer Facts:

- Leaves absorb sunlight and carbon dioxide to help them create food.
- Plants have roots to anchor them to the ground and draw in moisture from the soil, through the stem to transport it to the rest of the plant.
- Plants make their food using water and carbon dioxide in the green parts of the plant. Sunlight gives the plant energy to do this.
- The life cycle of a plant involves germination, pollination, seed growth and then seed dispersal.
- Seed dispersal helps as many seeds as possible to germinate and increases the amount of mature plants.
- Seeds and bulbs need the correct conditions to germinate

Prior Year 2 Learning

- observe and describe how seeds and bulbs grow into mature plants
- find out and describe how plants need water, light and a suitable temperature to grow and stay healthy

What do plants need?

Show children a dying plant – can children identify what happened/what went wrong? Could be used as a pre-assessment to consolidate Y2 learning and redone at end of Y3 unit to show progress.

Investigate what plants need to grow, building on what they have learned in Year 2 (light, water and warmth) by considering soil type, shade, amount of fertiliser, overwatering/under watering and how much room they have to grow. Year 2 will have grown seeds, so extend by comparing the needs of 2 differing plants. E.g. a flower vs a cactus. Tomato plant vs a flower. Make predictions, measure and record data for the experiment.

What can you predict about a plant from the size of its seed? Plan and carry out investigations to test your ideas with a range of seed types.

How does the space between seeds affect how well they grow?

Functions of a plant

If we stop gases from getting in and out of leaves what will happen? Set up a sealed glass dome or cover a plant in a sealed bag containing damp soil, normal air and some small flowering plants, what would you predict to happen over a long period of time?

Dissect and identify the parts of the flower.

How is the growth of a plant affected by removing different amounts of leaves?

Add flowers or celery into food colouring and observe changes over night. Cut celery into sections and create observational drawings of the xylem to investigate how water travels within plants.
Does the rate of water uptake vary in cold/war locations? For a further investigation, add celery into food colouring in a cold and warm place; compare the two at different times.

What does a seed do?

Leave a tub of compost outside and let weeds develop. Where did they come from? Were the seeds already in the compost or have they come from elsewhere? Use as a discussion point to reason/introduce seed dispersal.

Look at a range of different plants – fruits, vegetables, grasses, flowering plants, wild flowers and weeds then ask children to try to predict how their seeds are dispersed.

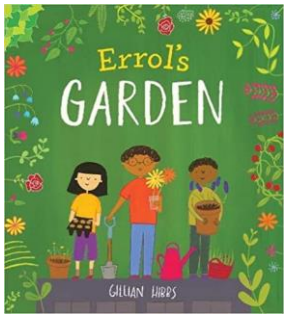
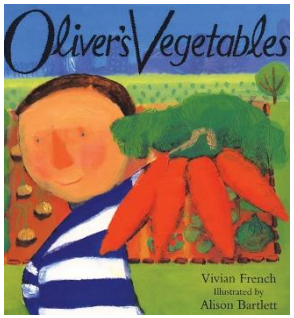
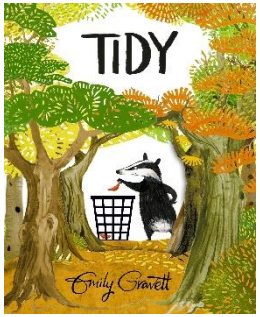
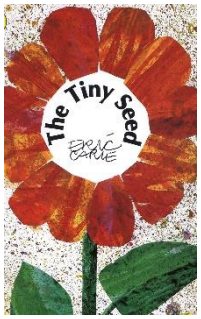
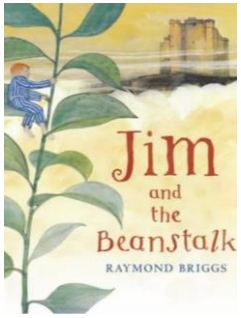
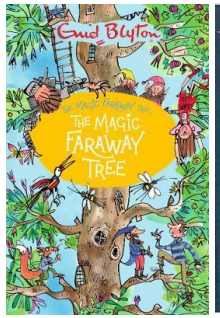
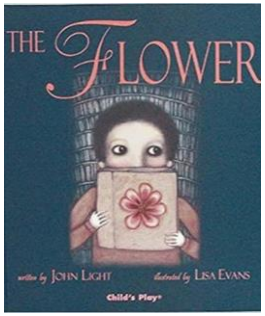
Sort images of different seeds depending on whether they are dispersed by animal/wind/water/explosion.

Key Vocabulary

roots*
stem*
trunk*
flowers*
leaves*
light*
water*
nutrients
life cycle
function
germination
reproduction,
transportation
dispersal
pollination
seed growth
energy
carbon dioxide
oxygen
xylem
*prior learning

Across other science areas in KS2:

- Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago
- Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents
- Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.

Year Group	Common Misconceptions	Recommended Linked Texts for Plants	
Year 1	- plants are flowering plants grown in pots with coloured petals and leaves and a stem - trees are not plants - all leaves are green - all stems are green - a trunk is not a stem - blossom is not a flower	**Errol's Garden** by Gillian Hibbs **Oliver's Vegetables** by Vivian French **Tidy** by Emily Gravett	  
Year 2	- plants are not alive as they cannot be seen to move - seeds are not alive - all plants start out as seeds - seeds and bulbs need sunlight to germinate	**The Tiny Seed** by Eric Carle **Jim and the Beanstalk** by Raymond Briggs **The Magic Faraway Tree** by Enid Blyton **The Flower** by John Light	   
Year 3	- plants eat food - food comes from the soil via the roots - flowers are merely decorative rather than a vital part of the life cycle in reproduction - plants only need sunlight to keep them warm - roots suck in water which is then sucked up the stem	**The Promise** by Nicola Davies **Du Iz Tak?** By Carson Ellis **The Magic and Mystery of Trees** by Jen Green