



KNOWLEDGE ORGANISER

SCIENCE: OUR CHANGING WORLD

YEAR FIVE

KEY KNOWLEDGE:

QUESTION 1: How do flowering plants reproduce?

ANSWER

Flowering plants are a type of vascular plant that produces flowers in order to reproduce. Flowering plants produce seeds within a fruit. The scientific name for flowering plants is angiosperms.

Flowering plants follow a specific life cycle.

- **Seed** - They begin their lives as seeds. Seeds are like baby plants. They have a hard outer shell that protects the seed embryo inside.
- **Germination** - The seed ends up on the ground. It needs air, water, and soil to grow. When a seed begins to grow, this is called germination. The first growth will usually be some small roots. Then stems will grow.
- **Sprout or seedling** - When the first sign of life appears above the soil, this is called a sprout or seedling.
- **Mature plant** - The seedling will continue to grow into a full mature plant with leaves, roots, and stems.
- **Flowering** - The mature plant will grow flowers. Through pollination, the flowers will produce seeds. When the seeds end up on the ground, the cycle will begin again.

Fruit

Fruits are a way which many plants spread their seeds. Fruits are formed after the flower is fertilized with pollen. The ovules in the pistil will become seeds and the flower will transform into a fruit.

Seed

The seed is the embryo of a plant. Sort of like a baby plant. Seeds come in all sizes shapes and colors depending on the type of plant. Inside the seed is a plant embryo, food for the embryo, and a seed coat to protect it. Seeds may be dispersed by a number of ways including air, water, and animals. Some seeds are light and have hairs or wings that help them to float in the air. Other seeds can float on the water and disperse by riding on rivers and streams. Still other seeds have tasty fruit that animals eat and then get dispersed in the animals' droppings.

Pollination

In order for an ovary to become a seed, it must receive pollen. Insects and birds can play an important role in pollinating plants. When an insect or bird is attracted to a flower by its bright color, they get pollen on them. As they move from plant to plant, they move the pollen from one plant to another. This helps the plants to reproduce by creating seeds.

QUESTION 2: What do plants need to be healthy?

ANSWER

Plants need air, light, warmth, water and nutrients to be healthy. If they are healthy, they can continue making their own food through photosynthesis. The roots, leaves and the stem of a plant have different functions that help to keep it healthy. A healthy plant is upright with green leaves.

- The roots of a plant take up water and nutrients from the soil. The roots also keep the plant steady and upright in the soil; they "anchor" the plant.
- The stem carries water and nutrients to different parts of the plant.
- The leaves use light from the sun, along with carbon dioxide from the air and water to make food for the plant. This process is called photosynthesis.

QUESTION 3: Which plants grow best in our climate and how is this changing?

ANSWER

The British winters, although wetter than usual, are becoming shorter which is leading to earlier bulb displays in gardens and trees are leafing sooner. The change in climate is a result of increased carbon dioxide in the atmosphere which is good news for plants as it will enable them to grow faster and stronger than before. This will, however, have a more negative effect on other garden plants that cannot adapt as well to the changing climate. Cottage garden favorites such as delphiniums and lupins are at risk of becoming rare in the south east over the next few years. This is because they need moisture retentive and fertile soil which is not as easily found in the drier summers we have been experiencing of late. There are differences in what plants flourish in the South East of the country and those that do well in the North West so there is no straightforward answer as to what plants will do well in a particular garden.