

# OUR CHANGING WORLD

## INTRODUCTION

In this module children develop their understanding of the life cycles of plants and of reproduction as a specific stage of those life cycles. This module links to Module 2, Reproduction in Plants and Animals. It provides children with further opportunities to explore ideas from that module actively and practically, applying knowledge, understanding and skills, often within the outdoor learning environment.

As they explore 'Our Changing World' of plants, children look for evidence of plant reproduction, for example, flowers, seed heads, berries and fruits on plants, throughout the year. They make observations of a wide variety of plants at different stages of their life cycles. They note all of this detail in an Our Changing World diary, on plant maps and also on planting plans. Children explore practically some of the methods of growing plants without seeds and propagation that they learned about in Lesson 3 of Module 2, Reproduction in Plants and Animals. They design and carry out a planting plan to grow a range of plants using seeds, bulbs, tubers, rhizomes, corms and leaf, stem and root cuttings, ready for a summer term 'produce sale' of crops. They investigate different ideas about how to improve crop yields and quality.

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### National Curriculum:

Describe the life process of reproduction in some plants and animals

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### Working Scientifically:

Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs and bar and line graphs

Identifying scientific evidence that has been used to support or refute ideas or arguments

Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary

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### Scientific Enquiry:

Observing changes over different periods of time

Carrying out comparative and fair tests

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### Key vocabulary:

flower, carpel, stamen, pollen, seed, seed head, berry, hip, fruit, pollinator, pollination, fertilise, fertilisation, seed dispersal, male, female, organs, sex, propagate, propagation, stem/leaf/root cutting, runner, tuber, rhizome, bulb, crop, cropping, produce, yield, glut, names of fruit and vegetables being grown

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## FACT FILE:

### Sexual reproduction in flowering plants

The reproductive organ of flowering plants is the flower.

The broad term 'flower' can be used to describe both **simple** and **compound** flowers. A simple flower has petals and contains a single set of reproductive parts at the centre, such as a buttercup or lily. Compound flowers appear to be single flowers, but the flower itself is actually made up of numerous small flowers arranged within a flower head. Daisies, dandelions and sunflowers are good examples of this. Most flowering plants have flowers with both male and female parts – 'perfect flowers' such as apple, tulip, daisy, dandelion and rose.

Some plants have separate male flowers and female flowers on the same plant, such as corn, courgette, marrow, squash and cucumber.

A smaller number of plants have male flowers and female flowers on separate plants, such as willow, maple and holly.

Children should learn that all plants do not produce 'perfect flowers' with both male and female organs, but that there are some plants with different sex flowers on the same or separate plants.

The female part of a flower consists of the **carpels**, which is where the seeds are formed. It has three parts: the **stigma**, the **style**, and the **ovary**. The male parts of the flower are the **stamens**, which produce **pollen**. Each stamen has two parts: an **anther** and a **filament**. The **anther** contains the pollen and the **filament** supports the anther.

When the flower is **pollinated**, a pollen grain sticks to the stigma. It then travels through a narrow tube which grows down through the style to the **ovary**. In the ovary, the pollen joins with the

**ovules**. This fusion of the male and female cells is called **fertilisation** and the fused cells divide to develop into **seeds**. After fertilisation, the ovary usually swells and becomes the **fruit**.

### **Asexual reproduction in plants**

Many plants can also reproduce without forming seeds. This is called asexual or vegetative reproduction, which results in new plants that are genetically identical to the parent.

Plants may reproduce themselves naturally:

- Below ground – rhizomes, tubers, bulbs and corms. These are underground growths on the root or stem of a plant and contain stores of food to provide for the growing young plant.
- Above ground – the parent plant produces runners and new plants sprout along its length.