

SUBJECT: Science

UNIT: Y7 Plant Reproduction

While you were away.

Lesson 1: Structure of a Flower

1. What is the function of the stigma and where is it located in the flower?
2. What are the roles of the carpel and stamen in plant reproduction?

Lesson 2: Pollination

1. How does insect pollination differ from wind pollination in terms of flower structure?
2. Why do insect-pollinated plants produce fewer pollen grains than wind-pollinated plants?

Lesson 3: Fertilisation

1. What happens during fertilisation in plants?
2. How does pollen reach the ovule in a flower?

Lesson 4: Germination Practical

1. What are the three main parts of a seed and their functions?
2. Which environmental factors affect whether a seed will germinate?

Lesson 5: Germination

1. What is the role of the food store in a seed during germination?
2. Why do seeds remain dormant until conditions are right for germination?

Lesson 6: Seed Dispersal

1. Why is it important for seeds to be dispersed away from the parent plant?
2. What are four methods of seed dispersal?

Lesson 7: Experimental Design

1. How do insects help pollination?
2. What features of seeds help them disperse effectively by wind?

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Key Vocabulary

Fertilisation

The fusion of the pollen and egg

Germination

The growth of a seed

Nectar

Sugary liquid which attracts pollinating animals to a flower.

Pollen

The male sex cell in a plant

Carpel

The female part of a flower

Stamen

The male part of a flower

Ovary

Where the eggs are stored

Anther

Where pollen is stored

Filament

Long stalk that holds up the anther

Stigma

Sticky part of the plant where pollen from another plant will stick

Style

A tube which pollen travels down to reach the ovary

Plant reproduction

Flowers contain various structures which all work together to allow the plant to reproduce

Pollination

Pollen must pass from one plant to another.

This is done in a variety of different ways however, the basic concept is that pollen from one plant makes its way to another plant. It then attaches to a sticky substances on the stigma.

Fertilisation

The pollen moves down the style towards the ovule where it joins with the ovule to create a seed. This is known as fertilisation

Germination

A seed has three main parts:

1. Embryo: the young root and shoot that will become the adult plant
2. Food store: starch for the young plant to use until it is able to carry out photosynthesis (to make its own food)
3. Seed coat: a tough protective outer covering.

Contents of the ovule become the food source for when the plant starts to grow or germinate. The seeds will often lie dormant until the conditions around it are just right for germination. Factors such as temperature, concentration of oxygen in the air, and water will affect germination.

Ambitious Vocabulary

Fertilisation

Germination

Pollination

Different types of pollination

There are two different types of plants in terms of pollination.

Insect pollinated plant – insects land on the plant collecting pollen on their bodies and then transferring it to the next plant that it lands on.

These plants have bright petals and a sweet smell to attract insects. The stigma and anther are inside the flower ensuring the insect is able to get to the pollen. The stigma is sticky so that the pollen carried from the insects sticks to it. Pollen grains are larger, and can easily stick to insects, so fewer pollen grains need to be produced. The anthers are firm and rigid to allow the insects to brush against them. They often contain nectar, which is sweet and sugary to attract insects. Some bees use nectar to make honey.

Wind pollinated plants – strong gusts of wind blow pollen from one plant to another.

No petals as there is no need to attract insects. The anther hangs loosely out of the plant to make it easier for wind to blow it from the plant. The stigma hangs outside of the plant to make it easier to catch pollen on the wind. The stigma may be feathery or sticky to catch pollen blown by the wind. They produce large amounts of pollen to increase the chances of it reaching another plant. Their pollen has a low mass so can be blown far on the wind.

Seed Dispersal

When a plant has developed a seed through fertilisation then it needs to be put into soil to develop and germinate. This cannot be too close to the existing plant as it will take resources from this plant. Therefore, seeds must be dispersed away from the parent plant.

There are 4 main ways of seed dispersal.

1. Animal dispersal – either animals eat seeds and they pass through their digestive system or they stick to the fur of animals and are passed to other locations this way.
2. Explosion – seed pods burst open and seeds are spread far from the plant
3. Water dispersal – seeds drop from the plant into running water and are spread through the current
4. Wind dispersal – seeds are spread through strong gusts of wind