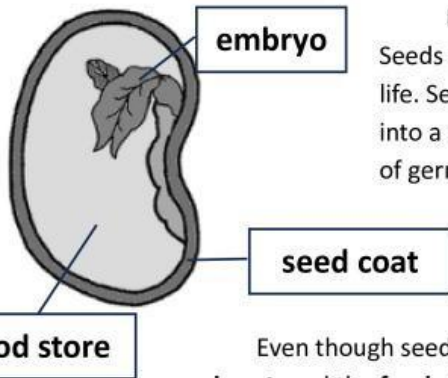


Reading Comprehension: Seeds and Germination



Have you ever planted a seed in the soil and waited for it to grow into a plant? Seeds are amazing. They are small, but inside every seed is the beginning of a new life. Seeds are how many plants reproduce, and they hold everything needed to grow into a new plant. In this reading, we will learn about the parts of a seed, the process of germination, and some examples of different seeds.

The Parts of a Seed

Even though seeds are small, they have three important parts. These parts are the **embryo**, the **seed coat**, and the **food store**.

1. The Embryo

The embryo is the tiny baby plant inside the seed. It is the most important part of the seed. The embryo has tiny leaves, a tiny stem, and a tiny root. When conditions are right, the embryo will start to grow and become a young plant. Without the embryo, there would be no new plant.

2. The Seed Coat

The seed coat is the hard outer layer of the seed. It protects the embryo and the food inside the seed. The seed coat makes sure the embryo does not get hurt or dry out. Some seed coats are very thin, while others are very hard and thick. For example, bean seeds have a thin seed coat that is easy to remove, but acorn seeds have a very hard shell.

3. The Food Store

Seeds need energy to grow. The food store inside the seed provides this energy. The food store is like a lunchbox for the embryo. It gives the young plant food until it can make its own food using sunlight and photosynthesis. This food is often in the form of starch, proteins, or oils. For example, sunflower seeds have a lot of oil in their food store.

Special Report
World News

Daily News

8th March 2024

'Doomsday' Vault Takes Single Largest Donation

On an archipelago in the Arctic Circle is a global backup system for the world's seeds.

It's called the Svalbard Global Seed Vault but is better known as the 'Doomsday' Vault.

It recently opened its doors for the first time in 2024 and welcomed a record batch of seeds.

Twenty-three seed banks from around the world deposited more than 12,000 samples!

But don't worry, they don't think the end is nigh. To help keep temperatures down, the seed bank only opens its doors a few times a year.

Countries sending seeds for the first time included Indonesia, Kazakhstan,

Photo: The entrance to the vault. Marcin Kadziolka/Shutterstock.com.

Kenya and Madagascar. Barley, rice, maize and African baobab seeds were added to the large, frigid vault.

Åsmund Asdal works for the vault. He said: "The Seed Vault works much like an insurance – except that it is free-of-charge. Hopefully, you never need to use it, but if the worst should happen it's crucial."

Comprehension Questions

Today's Big Question

Archipelago:

quần đảo

Doomsday

ngày tận thế

Vault

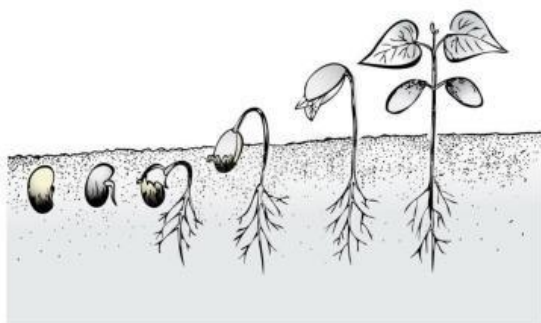
kho tiền

Frigid

lạnh giá

Crucial

rất quan trọng



What is Germination?

Germination is the process by which a seed begins to grow into a new plant. Not all seeds germinate right away. Some seeds wait for the right conditions. For germination to happen, a seed needs **water, oxygen, and the correct temperature**. Some seeds also need light, while others grow best in the dark.

Let's look at the main **stages of germination**:

1. The seed absorbs water

When the seed is planted in moist soil, it begins to take in water. This is called **imbibition**. The seed swells and the seed coat becomes **soft**. Water "wakes up" the embryo and makes it ready to grow.

2. The seed coat breaks

As the embryo grows, it pushes against the seed coat. The seed coat splits open, and the embryo starts to come out. The **tiny root**, called the **radicle**, is usually the first part to emerge.

3. The root grows down

The root grows downward into the soil. This helps the plant get water and minerals. Roots also hold the plant firmly in place.

4. The shoot grows up

Next, the shoot begins to grow upward. The shoot has the stem and tiny leaves. It moves toward the sunlight.

5. Leaves open and make food

Once the shoot reaches the surface, the leaves open. Now the plant can make its own food by photosynthesis. At this stage, the plant is no longer just a seedling. It is ready to continue growing into a mature plant.

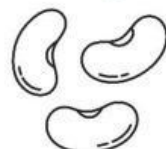
Different Types of Seeds

Seeds come in many shapes, sizes, and colors. Some are so small you can hardly see them, while others are very large. Let's learn about some specific seeds.



1. Sunflower Seeds

Sunflower seeds are small and oval-shaped. They have a black and white seed coat. Inside, the food store is full of oil. People like to eat sunflower seeds as snacks. Farmers also press them to make sunflower oil. The seeds grow into tall sunflower plants with bright yellow flowers.



2. Bean Seeds

Bean seeds are larger and easier to study. They have a soft seed coat that can be peeled off. Inside, you can clearly see the embryo and food store. Beans are often used in classrooms to show the stages of germination because they sprout quickly.



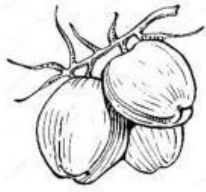
3. Apple Seeds

Apple seeds are found inside apples. They are small, brown, and smooth. If you plant an apple seed, it will grow into an apple tree. However, it may take many years for the tree to make fruit.



4. **Acorns**

Acorns are the seeds of oak trees. They are large and have a very hard seed coat. Squirrels often collect and bury acorns. Some of these acorns may germinate and grow into new oak trees.



5. **Coconut Seeds**

A coconut is actually a very large seed! The coconut has a hard shell, but inside it has both food and water for the embryo. The white part we eat is the food store, and the coconut water is also used by the young plant. Coconuts can float in the sea and grow into trees when they reach land.

Why Are Seeds Important?

Seeds are very important for people, animals, and the environment. They are the main way plants reproduce. Seeds also give us food, oil, and other products. Without seeds, we would not have many of the plants we eat, such as rice, corn, and wheat. Seeds are also important in nature because they provide food for animals like birds and squirrels.

Seeds may look simple, but they are full of life. Inside each seed is an embryo, protected by a seed coat and fed by a food store. When conditions are right, seeds germinate and grow into new plants. The process of germination includes water entering the seed, the seed coat breaking, the root growing down, the shoot growing up, and the leaves opening to make food. Seeds come in many shapes and sizes, from tiny apple seeds to giant coconuts. They are essential for life on Earth. Next time you see a seed, remember that it is more than just a small object – it is the beginning of a new plant.

Comprehension Questions

1. What are the three main parts of a seed?

2. What is the job of the embryo inside the seed?

3. How does the seed coat help the seed?

4. What does the food store provide for the embryo?

5. What three things does a seed need to germinate?

6. What is the first part of the embryo to grow during germination?

7. Why does the root grow downward into the soil?

8. What process helps the plant make its own food after the leaves open?

9. Give two examples of seeds that people eat.

10. Why are seeds important for animals?

11. How are coconuts special compared to smaller seeds?

12. In your own words, explain why seeds are important for life on Earth.

Wacky Ways Seeds Become Plants

Big Birds

Many seeds depend on birds to carry them to a good place to grow. Birds eat the tasty fruit surrounding seeds. After a trip in the bird's stomach, the seeds are released somewhere else – from the bird's waste. Plants with huge seeds, like those found in Australian rainforests, get consumed by a big bird, the cassowary. It helps rainforest plants survive by swallowing fruit whole, then depositing the seeds elsewhere in its giant droppings. Emus are another big bird that play an important role in the germination of certain plants. An endangered Australian plant, the snottygobble (nodding geebung or *Persoonia nutans*) is a food source for animals like possums and emus. The seeds are very hard to wake from dormancy but being eaten by an emu helps them to start growing.

