How Do Seeds Grow Into Trees of Different Sizes

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Introduction

Every tree starts as a small seed, but not all trees grow to be the same size.
Seeds need **water, sunlight, air, and nutrients from the soil** to grow. As the seed sprouts, it grows roots and stems (Figure 1). Roots absorb water from the soil and stems grow towards the sunlight. The kind of tree the seed grows into is decided by its **species or DNA.** However, genetics are not enough to grow a plant. Trees with plenty of sunlight, water, air and healthy soil usually grow bigger and stronger.

Explanation of Scientific and Technical Principles

- **DNA (Genetics)**

Every seed contains DNA, which is like an instruction book. DNA inside a seed decides what kind of a tree it becomes and how bigger it can grow.

- **Germination**

When a seed gets water **(H_2O)**, oxygen **(O_2)**, and right amount temperature, it starts to grow, which is called germination. First, root grows downwards in the soil to absorb water **(H_2O)**, and nutrients. Next, the shoot grows upward to find sunlight (Figure 1).

- **Photosynthesis**

The trees use photosynthesis to make their own food (Figure 2). The leaves absorb sunlight, carbon dioxide **(CO_2)** and water **(H_2O)** to produce oxygen **(O_2)** and sugar, which is called Glucose, which helps trees grow. (Figure 4).

- **Respiration**

Respiration is where the trees use Glucose which was made during daytime to turn into energy (Figure 3). The plant combines Glucose with oxygen **(O_2)** to release energy for growing. In this process, trees produce carbon dioxide **(CO_2)** and water **(H_2O).** (Figure 4).

- **Stomata**

Tiny holes on the backside of the plant leaves are called stomata. These can open and close to take in and out of the plant, carbon dioxide **(CO_2)**, oxygen **(O_2)** and water **(H_2O)**.

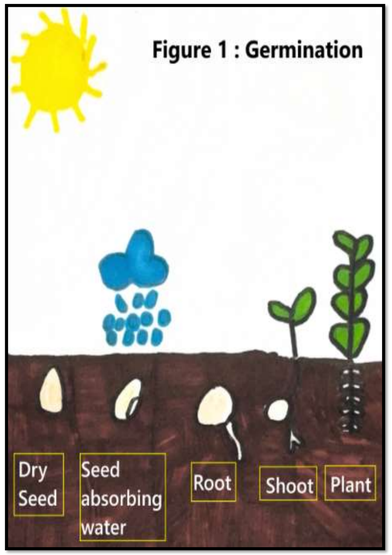
- **Chlorophyll**

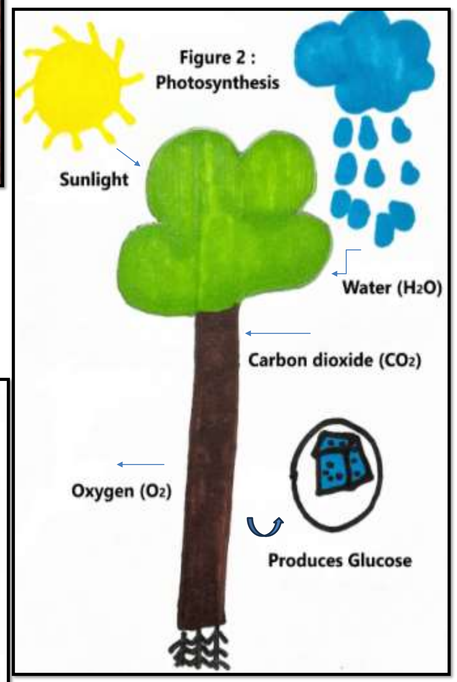
Green pigment that makes leaves green, which catches sunlight and helps the photosynthesis process.

- **Chloroplast**

Tiny parts inside plant cells, which contain chlorophyll.

Plant leaves contain chloroplasts, which hold chlorophyll. Chlorophyll captures sunlight, and stomata lets carbon dioxide **(CO_2)** into the leaf. Together, they help the tree make food through photosynthesis.





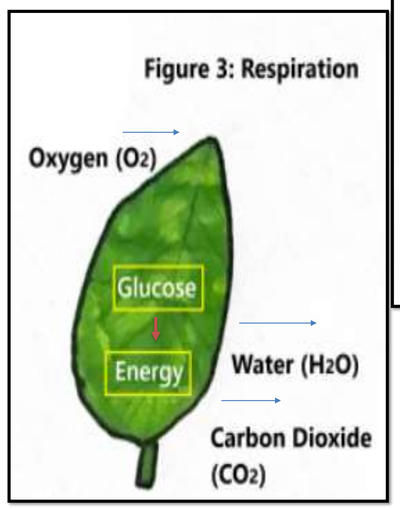


Figure 4: Photosynthesis vs. Respiration

Photosynthesis	Respiration
Makes Glucose	Uses Glucose to release energy
Needs sunlight	Happens all the time, day and night
Uses carbon dioxide and water	Uses oxygen and Glucose
Produces oxygen	Produces carbon dioxide and water

Significance and Impact

Understanding how seeds grow into trees of different sizes is important because trees affect our lives and the planet in many ways.

1. Trees produce oxygen
Trees release oxygen during photosynthesis, which humans and animals need to breathe.
2. Trees help fight climate change
Carbon dioxide is a greenhouse gas. Excessive carbon dioxide makes earth warmer, which means icebergs start melting and seawater levels going up, which is a threat to the world. Trees breathe carbon dioxide which helps to slow down climate change.
3. Trees protect soil
Tree roots help hold soil together and prevent washing away nutrients (erosion) in the soil.
4. Help us choose the right trees to plant
By understanding how seeds grow and why different trees grow to different sizes, farmers, and gardeners can choose the best trees to plant in different places.
5. Trees provide habitats
Different-sized trees create homes for birds, insects, and other animals.
6. Supports farming and food production
Understanding plant growth helps farmers grow healthier fruit trees.

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References

- Royston, Angela (2017), Plants 1, The Watts Publishing Group, p.5, p.8
- Richards, Jon (2019), Plants (Science in infographics) 1, Gareth Stevens Publishing, p.6-9
- Tyler, Madeline (2019), Plants 1, Booklife Publishing, p.6-11
- Respiration https://kids.britannica.com/kids/article/respiration/ Accessed June 1, 2026, 4.30 PM
- Tree facts for kids https://kids.kiddle.co/Tree Accessed June 1, 2026, 6.00 PM
- How Do Trees Grow? Tree Life Cycle Explained https://onetreeplanted.org/blogs/stories/how-trees-grow Accessed June 2, 2026, 11.00 AM