

Summer

From early in the morning until late at night, summer sunshine provides the energy trees need to make new wood, twigs, and leaves.

SEEDS TO TREES

Many tree seeds germinate in summer. Sunlight and moisture send the seed signals to begin to sprout. Water softens the seed shell and expands the food inside. A root grows downward. A stem pushes up toward the sunlight.



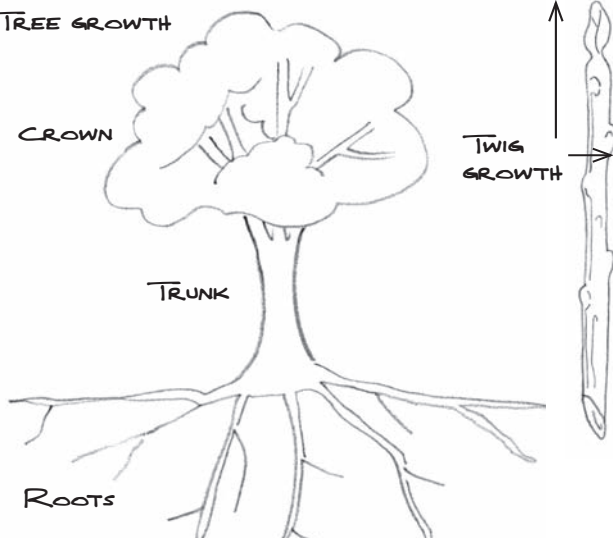
HOW TREES GROW

Trees grow throughout their lives. They get bigger in three places: root tips, cambium, and buds.

- The roots grow longer as cells in the root tips divide.
- New shoots, twigs, and leaves form as buds open and grow.
- The trunk and branches grow thicker as the cambium (the layer of cells beneath the bark) makes new layers of xylem and phloem (the cells that carry water, sugar, and nutrients up and down the tree).

BY FORMING NEW CELLS UNDER THE BARK AND AT THE TIPS OF THE BRANCHES AND ROOTS, A TREE GROWS IN DIAMETER, HEIGHT, AND EXTENT OF ROOT SYSTEM EACH YEAR.

TREE GROWTH



Just like people, a tree needs water, nutrients, and energy to grow. A tree draws water and nutrients from the ground through its roots. Like other plants, it uses energy from the sun, captured by chlorophyll and other pigments in the leaves, to transform carbon dioxide and water into sugar. This process, called photosynthesis, takes place in the leaves. The sugar then travels through the branches and trunk to nourish the rest of the tree.

PHOTOSYNTHESIS

1. Chlorophyll and other pigments absorb energy from the sun and store it in green-colored, microscopic structures called chloroplasts.
2. The tree takes in carbon dioxide through small holes in its leaves called stomata.
3. Using the stored energy, the tree combines carbon dioxide with water drawn up from the roots to make sugar and oxygen.
4. The tree uses the sugar to grow. It releases the oxygen to the air. Trees help make the oxygen we need to stay alive.

LEAF CROSS SECTION

CHLOROPLASTS (GREEN-COLORED)

