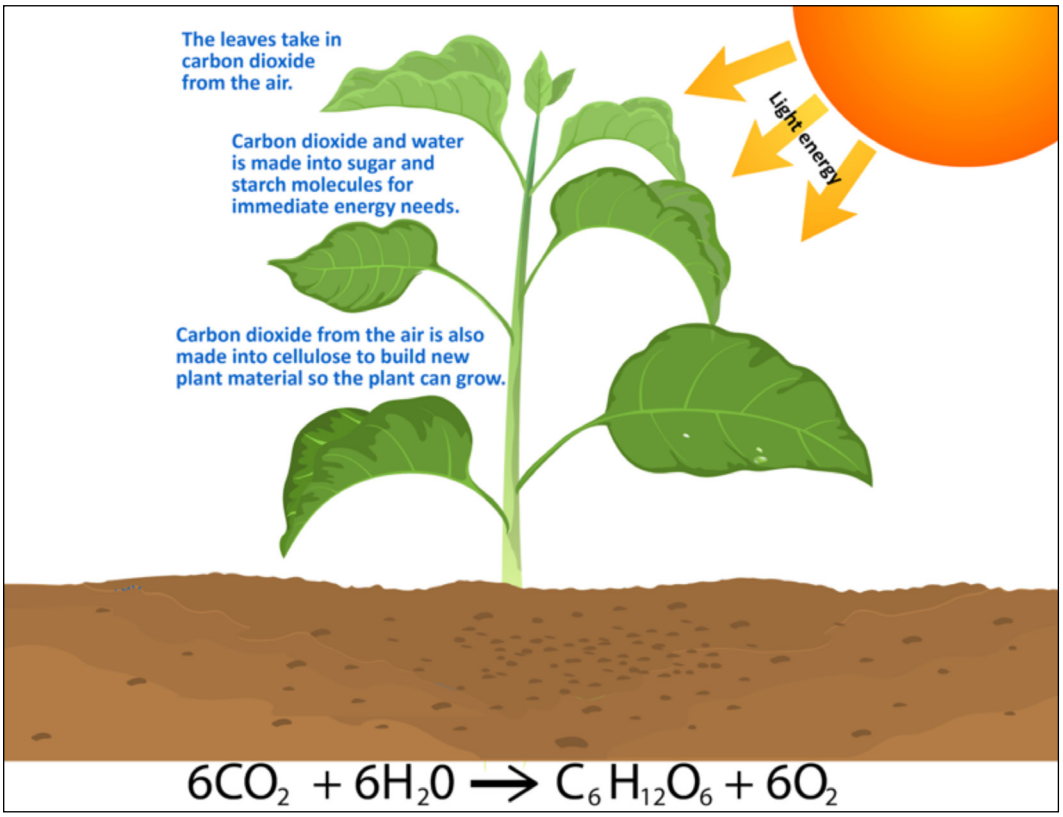
Photosynthesis Reading

Have you thanked a tree today? We all owe our lives to plants and other organisms that absorb light. All living things, including humans, need energy for growth, repair, and reproduction. However, most organisms are not able to use light energy directly for these energy needs. We need some way to change that light energy into chemical energy. Plants change light energy into chemical energy through a process called photosynthesis.

Photosynthesis is the process in which plants take sunlight energy and convert it into energy that can be stored as carbohydrates. This process provides the chemical energy that almost all species use. Glucose, an energy-rich sugar molecule, is the most essential carbohydrate molecule. This process is driven by light energy to build glucose molecules from water and carbon dioxide. A byproduct of this process is oxygen, some of which is released. These glucose molecules provide two important resources to organisms: immediate energy and material for growth.

- **Energy**. The glucose molecules provide fuel for cells. The chemical energy in glucose can be then used through processes like cellular respiration or fermentation and meet the cell's immediate energy needs. Starches are a group of molecules that connect many sugar molecules together and provide energy for later needs.
- **Growth**. Air is mostly composed of three gases: nitrogen, oxygen, and carbon dioxide. In order to get the carbon to grow, plants absorb carbon dioxide from the air.

Photosynthesis Reading (continued)



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The carbon taken from the carbon dioxide in the air can be integrated into other organic molecules besides sugar. This carbon makes up most of the material that plants use to build new leaves, stems, and roots. The carbon that's used to make sugars during photosynthesis can be used to build other types of organic molecules that cells need. Cellulose is similar to starches. It is a molecule that is made from long strings of glucose molecules. In cellulose, long chains of glucose molecules are linked together as in starch, but the arrangement is different. This is why humans cannot digest cellulose, but we can digest starches.