



SUGAR- CAPTURED SUNSHINE

You've probably heard of solar energy, but have you ever heard of sugar energy? Well, guess what? That's what sugar is — pure and simple — it's the plant's **energy!**

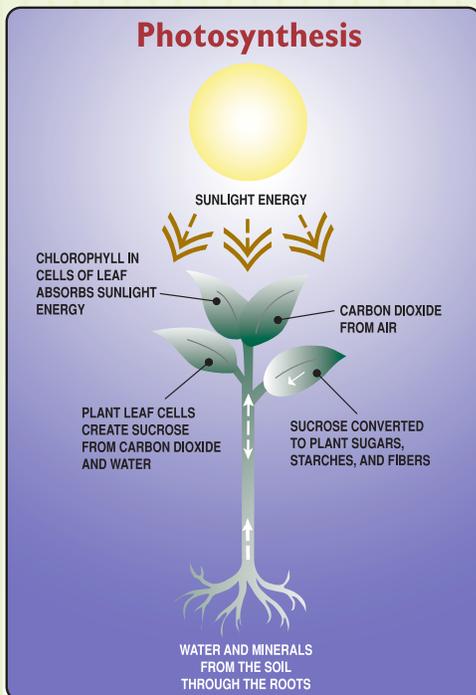
All green plants make sugar through photosynthesis. Photosynthesis is the process by which plants transform the energy from sunlight into sugar, their stored food and energy supply.

The recipe is pretty easy and contains just four natural ingredients:

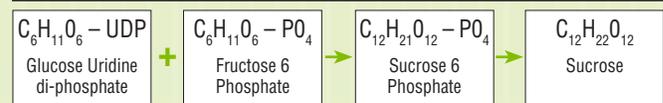
- carbon dioxide
- sunshine
- soil
- water

This powerful combination is all Mother Nature needs to create sugar (chemical name sucrose).

Energy from the sun is absorbed by the **chlorophyll** in the cells of the plant's leaves. The leaves also take in carbon dioxide (CO₂), a gas that we release when we exhale. Water, and the minerals it carries, is soaked up by the plant's roots. The combination of these ingredients produces a chemical reaction, and sucrose, or sugar, is made. This sugar in plants provides energy for them to grow.



Synthesis of Sucrose in Plants



Sugar exists naturally in almost every fruit and vegetable, but two special plants are packed full of sugar. Sugar occurs in the greatest quantities in sugarcane and sugar beets.

SUGARCANE

Sugarcane is a tropical grass that grows 10-20 feet high. The sucrose that is **created** by the plant is stored in the thick stalks or canes. A stalk of sugarcane contains 12-14% sucrose.



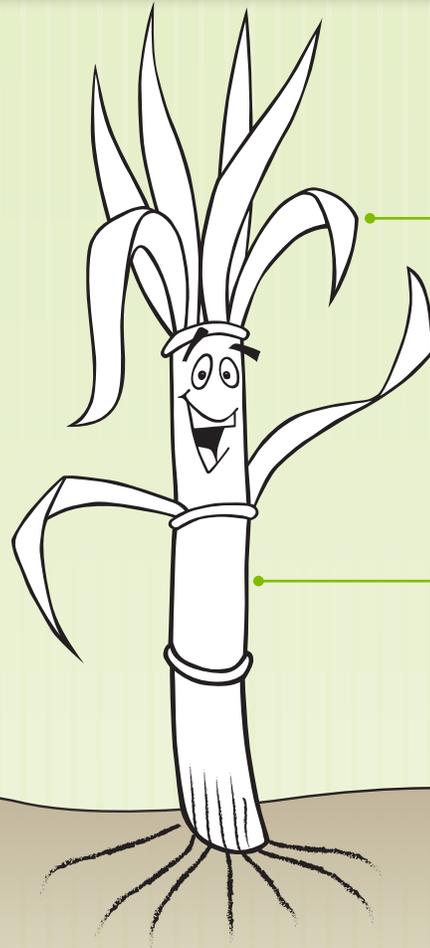
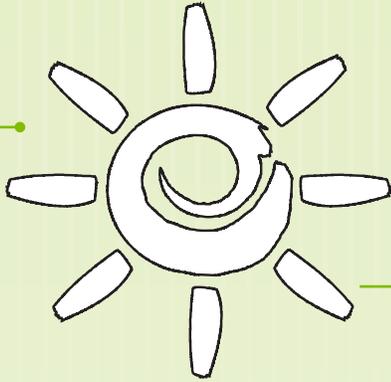
The sugar we **extract** from sugar beets and sugarcane is exactly the same as the sugar/sucrose in a peach, watermelon or carrot.

So, now you know how Mother Nature and plants produce sugar. It's pure and simple.

Glossary

- **energy** - n. source of usable power
- **carbon dioxide** - n. a natural, colorless, odorless gas
- **chlorophyll** - n. a green substance in the leaves of plants which helps plants make sugar from elements in air and water
- **create** - v. to cause to exist
- **extract** - v. to take or pull out

Complete this diagram to help you identify and remember the parts of the sugarcane plant. Use the key below to color the different parts of the plant as indicated. Use the word bank to fill in the blanks.



Color Key

YELLOW

Where plants get energy.

GREEN

Where chlorophyll is located.

LIGHT BLUE

Where plants get carbon dioxide.

BROWN

Where plants get water and minerals.

TAN

Where sugar is stored in plants.

Word Bank

SUN

AIR

LEAVES

STALK

SOIL