



Warm-up

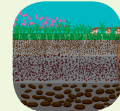
Like humans, plants need food (nutrients) for energy. Do you know where you get your energy from? That's right! We get energy from the food we eat for breakfast, lunch and dinner every day. Can you think of food that gives you a lot of energy? Write down three types of food that gives you energy.



Vocabulary

Match the picture with the word:

chlorophyll



organic compound



inorganic compound



Learning

Plant Nutrition

Plants absorb nutrients and water through their root system, as well as carbon dioxide from the air. The combination of soil, nutrients, water and carbon dioxide, along with sunlight, allows plants to grow!

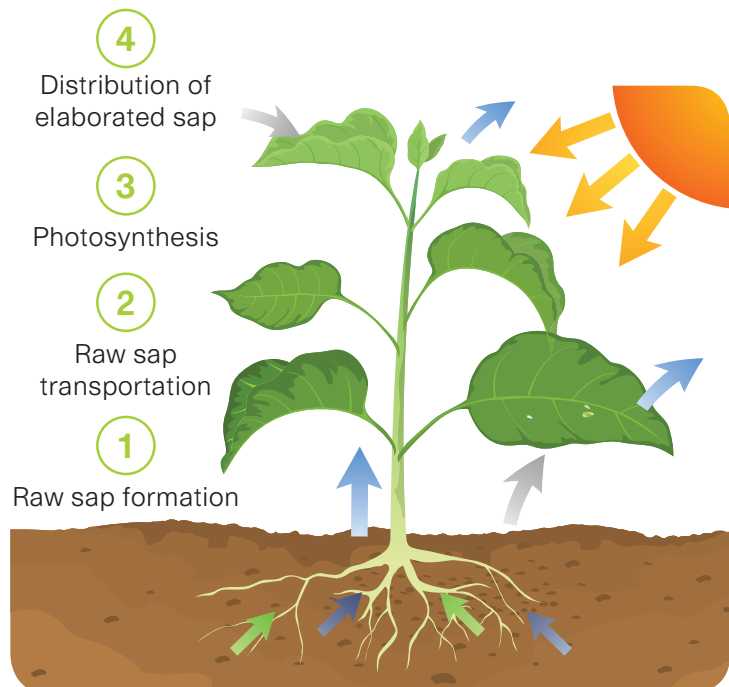
Raw sap is the mixture of water and mineral salts. The raw sap travels from the roots through the stem to the leaves. The leaves change it to elaborated sap through a process called photosynthesis.

Think about it...

Nutrition is the process of gaining food necessary for your health and growth. What does plant nutrition mean?



Transportation of raw sap



Critical Thinking

Water and mineral salts cannot feed the plant by itself. It has to be put together, like cement that you need to build a house. How are water and minerals joined together?

Learning

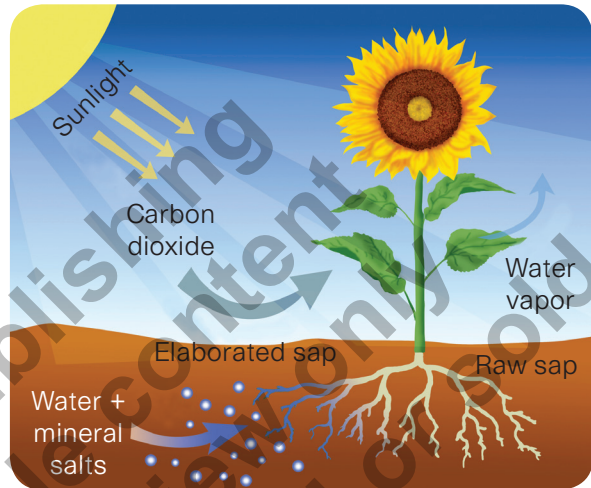
In the leaves, water and mineral salts mix with carbon dioxide that become food for the plant. The food is called elaborated sap. Plants use a lot of energy from the sun to carry out photosynthesis. As you have learned before, during photosynthesis, plants release oxygen. All the oxygen in the air comes from plants.



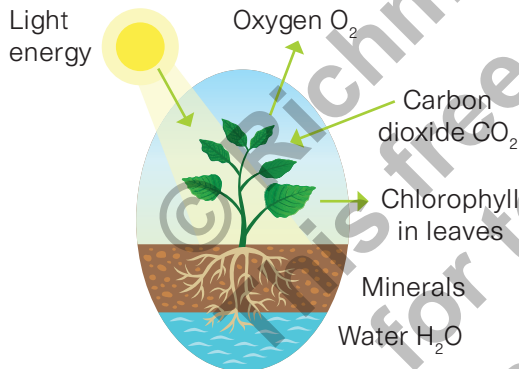
Think About It...

Without plants we will not be able to breathe! What can we do to make sure we preserve plants on Earth?

The process of photosynthesis



Substances Needed for Photosynthesis



Without **chlorophyll**, plants will not be able to make food. All plants have chlorophyll, a green pigment in leaves and stems. During fall, temperatures change as well as the length of daylight.

The leaves stop producing chlorophyll and therefore stop changing carbon dioxide and water into oxygen and glucose. Leaves lose their green color; yellow to orange colors become visible.

Application

- Complete the passage below with the words from the word box.

leaves	carbon dioxide	oxygen	mineral salts	photosynthesis
roots	raw sap	water	sunlight	elaborated sap

Plants make their own food through _____. They absorb _____ and _____ from the soil through their _____. This mixture is the _____ that travels up the stem to the _____. With _____ and _____ from the air, the leaves transform the raw sap into _____, the plant's food. Additionally, during photosynthesis plants release _____ into the air.

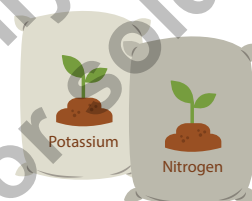
Learning

Organic and Inorganic Compounds

Plant nutrients may be composed of either **organic** or **inorganic compounds**. An organic compound contains carbon, such as carbon dioxide obtained from the atmosphere. An inorganic compound does not contain carbon and is not part of, or produced by, a living organism. Inorganic substances (which form the biggest part of the soil substance) are called minerals. Inorganic substances required by plants include nitrogen and potassium.

During photosynthesis, plants convert carbon dioxide and water into carbohydrates and oxygen. Because photosynthesis requires sunlight, this process only happens during the day. We often like to think of this as plants “breathing in carbon dioxide” and “breathing out oxygen”.

Did you know?
Plants get nutrients from different types of elements.



Inorganic substances

Application

- Match the words with the correct description.

Chlorophyll	<input type="radio"/>	<input type="radio"/>	A sugar created from water and carbon dioxide.
Inorganic substances	<input type="radio"/>	<input type="radio"/>	A green pigment in leaves necessary to make food.
Glucose	<input type="radio"/>	<input type="radio"/>	Examples of inorganic substances found in soil.
Nitrogen and potassium	<input type="radio"/>	<input type="radio"/>	A compound with carbon, not produced by a living organism.



Be a Scientist

In this experiment you will investigate the effect of carbon dioxide on plant growth and photosynthesis. Tests must be done with enough sunlight and proper temperature for plant growth.

You will need

Potted plant, plastic bag and a rubber band

Steps

- Cover half of your plant with a plastic bag.
- Check your plant every 4 days. Keep a record of what you observe each day.
- Remember to water your plant every 2 or 3 days.

My Observation and Conclusion

What happened to the part of plant that was covered in the plastic bag?
Why did this happen?

Learning

Plant Food Storage

The sugars move from the leaves to other parts of the plants where they are stored.

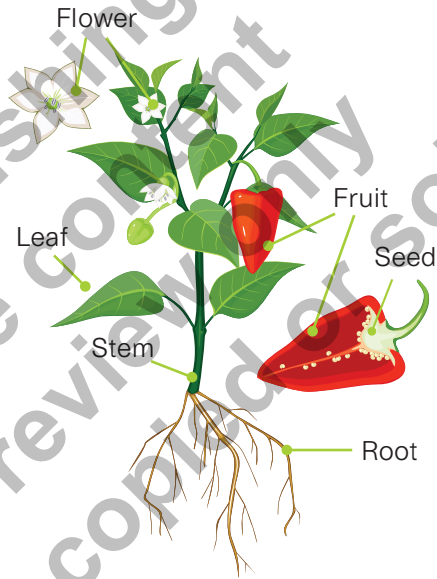
Water in the plant veins carries the sugars. Sugars are changed into starch when they reach the storage parts of the plant.

Plants store the starch in these places:

- leaves (cabbage, spinach, lettuce)
- fruit (apples, banana, peaches)
- stem (sugar cane)
- seeds (wheat or corn)
- flowers (broccoli and cauliflower)
- roots (carrots or beetroot)





Think about it...

Plants are like factories! They make food for themselves, for animals and for us to eat. Where do plants store all their food?



Application

- Look at each picture. Write down the part of the plant where the food is stored.

Food	Picture of Plant	Organ
Sugar (Sugar Cane)		
Starch (Potato)		
Fats (Avocado)		
Proteins (Spinach)		

- Write **T** for true and **F** for false.

Plants store their food only in their roots.	
During photosynthesis, plants convert carbon dioxide and water into carbohydrates and oxygen.	
Plants don't need chlorophyll to make oxygen.	
Human can live without plants.	
Raw sap is the mixture of water and mineral salts.	

Did you know?

A storage organ is a part of a plant adapted for the storage of energy in the form of sugars, starches, fats and proteins.

