

Learn about Photosynthesis

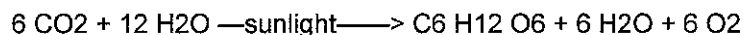
From <http://sciencewithme.com/learn-about-photosynthesis/>

Very few plants can actually trap their own food and none can go grocery shopping so plants need to make their food by themselves if they want to eat! Plants are fortunate as they are the only living organisms that can make their own food. How do they do this?

They make their food by combining carbon dioxide gas that is found in air with water and nutrients that they absorb from the soil.

In order to do this though they need energy – which they get from sunlight. The energy from sunlight (solar energy) is used by the plant to make carbon dioxide and water **react chemically together** and change into glucose (food) and oxygen. This process is called photosynthesis. The word photosynthesis comes from two Greek words: photo meaning light and synthesis meaning putting together so photosynthesis means “putting together with light”.

We can write photosynthesis like this:



In the process of photosynthesis plants change solar energy into chemical energy.

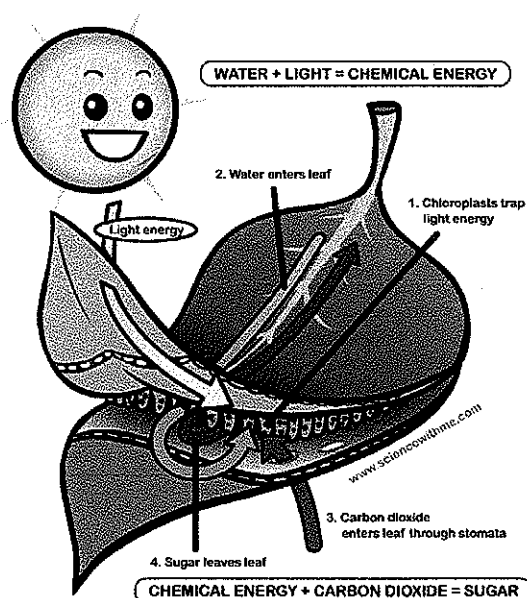
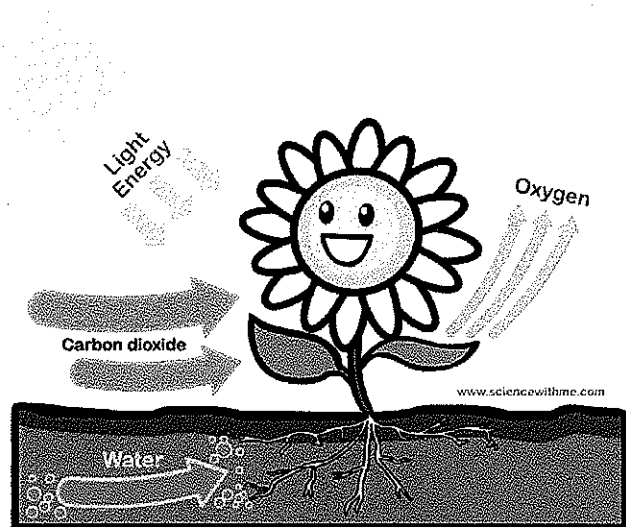
What has the sun got to do with photosynthesis?

The sun is a very powerful source of energy. People are always trying to harness it to make electricity, warm their houses, heat their water etc. Plants figured out how to use solar energy millions of years ago to make their food. They use the light energy from the sun (solar energy) and convert it into chemical energy that is stored as sugar (glucose) in the plant. Excess glucose is stored as starch in the leaves, roots, stems and seeds of the plant. The energy from the sun is transferred to the plants. This energy is then passed to animals when they eat plants. Whenever the plant needs energy it breaks down its stored glucose for its life processes

How do plants capture the sun's energy?

Plants can do this because of leaf structures called chloroplasts that contain a special substance called chlorophyll.

Chlorophyll is the pigment in plants that gives leaves their green color. This pigment that is found in the leaves and the



stem of the plant is responsible for absorbing light energy from the sun. At night when there is no light a plant stops making food.

Why are most leaves broad and flat?

It shouldn't be too surprising for you to learn that the plant's structure is very well adapted to trap sunlight and absorb carbon dioxide. A wide broad surface will capture far more light than a thin narrow leaf surface. Solar panels that you see on houses are also broad and flat for the same reason.

What else is important to help plants grow?

Just like humans do, plants also need mineral nutrients to keep healthy, grow and perform their life processes well. Plants get mineral nutrients from the soil using their roots. The mineral nutrients are dissolved in the water the plant absorbs. If the soil does not have enough mineral nutrients the plant will not grow properly. Farmers often test the soil to check that there are enough nutrients for their crops to grow. If there are not enough minerals present in the soil the farmer will add fertilizers. A fertilizer usually contains the main minerals that a plant needs.

Why is photosynthesis so important?

Photosynthesis is one of the most important chemical reactions in the world. What are the reasons for this?

Photosynthesis makes food for plants and for animals.

We have already learned that plants feed themselves by using sunlight to convert carbon dioxide and water into food (sugar). Whenever the plant needs energy for itself it breaks down its stored food. Animals get their food by eating the plants so they depend on plants for their food.

Photosynthesis results in oxygen gas being made that is released by the plant into the atmosphere for living things to breathe.

Living things breathe in oxygen and breathe out carbon dioxide all the time. Fortunately plants do the opposite. When plants are making food they breathe in carbon dioxide and breathe out oxygen. Therefore plants are extremely important to humans and animals as they give them oxygen to breathe and prevent us all from suffocating. Oxygen is needed by all living organisms to burn up food for energy.

Photosynthesis results in carbon dioxide gas being removed from the atmosphere. Carbon dioxide is a greenhouse gas that is responsible for global warming.