

Do Plants Store Energy?

Overview: Put your safety goggles on for today's lab, because we're working with fire! You'll be measuring how much energy a peanut holds by setting it aflame.

What to Learn: All our energy needs on earth come from somewhere. We cannot make our own food, but plants can. We are all connected to the plants and soils that they grow in because they provide our very basic needs, as well as some of our more modern needs.

Materials

- Goggles
- 2 shelled peanuts
- Small pair of pliers
- Match or lighter
- Sink
- Timer

Lab Time

1. Today we're working with fire, so follow all special instructions about working with flames today.
2. Close the drain with a sink stopper, and fill the sink with around an inch of water.
3. Put on safety goggles. Using a small pair of pliers, hold the peanut over the sink and ask your adult helper to light the peanut with the lighter until it catches fire. Have your data recorder ready with the timer.
4. Upon ignition (when the peanut is burning by itself and doesn't need the lighter), start the timer and run it until the peanut stops burning. Record the time on the worksheet. The adult remains present for the entire duration that the peanut is on fire.
5. Drop the peanut into the sink once finished to ensure all flames are out. Allow it to cool as you record additional observations in the worksheet and complete the exercises.

Do Plants Store Energy? Data and Observations

Peanut	Time burned (write in seconds):
1	
2	

Observations:

Does the peanut burn with a clean flame or a sooty flame?

What color is the flame? What color does the peanut turn when it burns?

Did the size of the peanut change after it had burned for several minutes?

Reading

A peanut is not a nut, but actually a seed. In addition to containing protein, a peanut is rich in fats and carbohydrates. Fats and carbohydrates are the major sources of energy for plants and animals.

The energy contained in the peanut actually came from the sun. Green plants absorb solar energy and use it in photosynthesis. During photosynthesis, carbon dioxide and water are combined to make glucose. Glucose is a simple sugar that is a type of carbohydrate. Oxygen gas is also made during photosynthesis.

The glucose made during photosynthesis is used by plants to make other important chemical substances needed for living and growing. Some of the chemical substances made from glucose include fats, carbohydrates (such as various sugars, starch, and cellulose), and proteins.

Photosynthesis is the way in which green plants make their food, and ultimately all the food available on earth. All animals and non-green plants (such as fungi and bacteria) depend on the stored energy of green plants to live. Photosynthesis is the most important way animals obtain energy from the sun.

Oil squeezed from nuts and seeds is a potential source of fuel. In some parts of the world, oil squeezed from seeds--particularly sunflower seeds--is burned as a motor fuel in some farm equipment. In the United States and elsewhere, some people have modified diesel cars and trucks to run on vegetable oils.

Fuels from vegetable oils are particularly attractive because, unlike fossil fuels, these fuels are renewable. They come from plants that can be grown in a reasonable amount of time. Fossil fuels are nonrenewable fuels because they are formed over a long period of time.

Exercises Answer the questions below:

1. What is the process called where plants get food from the sun?
 - a. Osteoporosis
 - b. Photosynthesis
 - c. Chlorophyll
 - d. Metamorphosis
2. Where does all life on the planet get its food?
3. List two ways that we could use the energy in a peanut:
 - a.
 - b.

Answers to Exercises: Do Plants Store Energy:

1. What is the process called in which plants get food from the sun? (photosynthesis)
2. Where does all life on the planet get its food? (plants, and the sun)
3. What can people use a peanut's energy for? (fuel for cars, food)