

# Bioenergy Activity



## Where Does Bioenergy Come From?

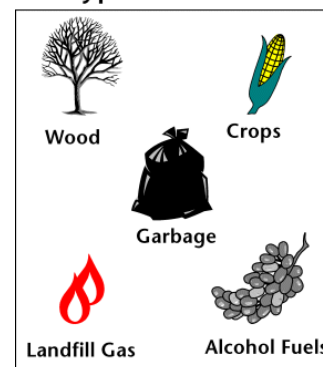
**Biomass — Renewable Energy from Plants and Animals:** Biomass is organic material made from plants and animals (microorganisms). Biomass contains stored energy from the sun. Plants absorb the sun's energy in a process called photosynthesis. The chemical energy in plants gets passed on to animals and people that eat them.

Biomass is a renewable energy source because we can always grow more trees and crops, and waste will always exist. Some examples of biomass fuels are wood, crops, manure, and some garbage.

When burned, the chemical energy in biomass is released as heat. If you have a fireplace, the wood you burn in it is a biomass fuel. Wood waste or garbage can be burned to produce steam for making electricity, or to provide heat to industries and homes.

source: [http://www.eia.gov/kids/energy.cfm?page=biomass\\_home-basics](http://www.eia.gov/kids/energy.cfm?page=biomass_home-basics)

### Types of Biomass



**Introduction:** Now more than ever, the energy to run cars, generate electricity, and power about anything is coming from a variety of energy sources. One type of energy is called bioenergy. Bioenergy is a renewable source of energy that is produced from plants and animals. Unlike bioenergy, fossil fuels, such as crude oil and coal, are not renewable because it takes millions of years for these fuels to form. Bioenergy comes from many types of sources, including corn. This Click It and Print It activity will be part of the 4-H Cloverbud Bioenergy Curriculum that will be available in early 2013.

**Instructions:** Read the story to the 4-H Cloverbuds titled, *The Tale of Johnny Energy Seed* (from the U.S. Department of Energy). Ask the children if they know of any other similar short stories that they might like to share.

**Application:** The story highlights one example of how corn can be a source of bioenergy. What are other sources of bioenergy? Some include soybeans, switchgrass, sugar cane, algae, and used vegetable oil. For more fun activities visit the Energy Kids site at: <http://www.eia.gov/kids/energy.cfm?page=1>

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4-H Cloverbuds  
OHIO STATE UNIVERSITY EXTENSION

# The Tale of Johnny Energy Seed



I'm Johnny Energy Seed. I plant energy seeds in a big field on my farm.

The sun shines. There is energy in the sun's rays. It helps my seeds grow into tall plants. My plants store the sun's energy in their roots, stalks, leaves and ears. Soon my energy plants look like this.



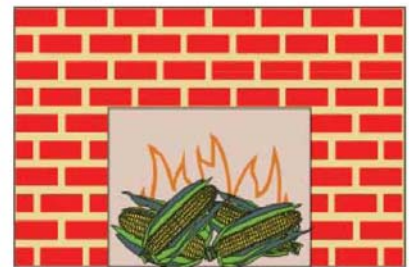
I can use the energy in my plants for many things. I can eat the seeds for energy for my body. This energy will help me grow and move and think.

I can feed my energy plants to my chickens, pigs, cows and horses. The energy will make my animals grow big and strong.

I can hang my energy plants in my barn to dry. Then I can burn them in my fireplace. The energy in my plants can keep me warm on cold winter nights.



I can put my energy plants into a big container that keeps out the air. As my plants decay, they can make a gas that I can burn in my stove to cook my food.



I can also turn my energy plants into fuel for my tractor. I turn them into alcohol, like grapes are turned into wine. This alcohol fuel, called **ethanol**, can run my tractor.

As you can see, a seed of corn really is an energy seed. Why don't you plant some corn seeds and explore the ways you can use the energy in the plants you grow.



Source: [http://www.eia.gov/kids/resources/teachers/pdfs/Activitybook\\_web.pdf](http://www.eia.gov/kids/resources/teachers/pdfs/Activitybook_web.pdf)  
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