Biomass Fuels

For thousands of years, people have been burning wood to heat homes, cook food, and boil water. In other words, people have been burning wood to release its energy for their daily needs. Wood fires are still used to today for these daily needs but these days, days people also use many other types of energy sources for their daily needs.

Wood is just one example of a fuel from biomass.

Wood is an example of a **biomass fuel**. Biomass is any material that was made by plants or other living things. Biomass can make useful fuels because of the energy that it contains. The energy stored in biomass originally came from the Sun. When a biomass fuel is burned, this energy is released.

An important advantage of biomass fuels is that they are renewable, which means able to be used over and over again. After a tree is cut and removed, a new tree can grow in its place. If we manage forests properly, we can continue using wood year after year and never run out.

A disadvantage of wood is that it bulky and burns somewhat slowly. Burning wood makes waste in the form of ashes. New biofuels lack these problems. Let's take a look at them.

Ethanol

Ethanol is a liquid biofuel. It can be made from many farm crops, including corn kernels. Today, ethanol is produced throughout the United States. It is added to gasoline, which is used to power automobiles and other vehicles.

Adding ethanol to gasoline helps decrease the use of gasoline. That's important because gasoline is a petroleum product, and petroleum is **nonrenewable**. After petroleum is used, it cannot be replaced. The world's supply of petroleum is always decreasing.

However, ethanol has disadvantages, too. Ethanol contains less energy than petroleum, so it makes a less efficient fuel. The corn and other farm crops that are used to make ethanol could be

used as food instead of fuel. Ethanol is also expensive to make. Scientists are looking for ways to lower this cost. If ethanol could be made efficiently from corn husks and stems, instead of corn kernels, then it likely would become less expensive and more popular than petroleum fuel.

Algae Biofuel

Algae are tiny, green, plantlike organisms. In nature, they grow near the surface of ponds, lakes, and rivers. Too much algae makes water appear green and murky—and not very attractive. But soon, algae could be put to good use.

Scientists think that algae can be an excellent source of biofuel. They grow quickly, and all they need to grow are fresh water and sunlight. They also are rich in energy. About half of their biomass is a form of oil!

Another advantage of algae biofuel involves transportation. Today, we mine petroleum and other fossil fuels from some of Earth's most remote places. Sometimes the fuels are shipped in huge tankers across the ocean. But algae can be raised almost anywhere, and their fuel can be produced close to where people need it.

Several companies are making algae biofuel right now. However, more research is needed to produce algae biofuel at a large enough scale to be considered an efficient fuel. Another problem is that algae need a lot of water to grow. Many communities do not have enough water that algae would need to make fuel.

Biofuels from Vegetable Oil

Vegetable oil is used to cook French fries, donuts, and other foods. Do you think vegetable oil could be used as biofuel? The answer is yes! With proper treatment, vegetable oil can be changed into a useful fuel for powering cars, trucks, and other vehicles.

In 2013, the city of Atlanta, Georgia, agreed to work with an energy company to turn vegetable oil into a source of biofuel. The plan is for the energy company to gather used fats, oil, and grease from restaurants and kitchens in Atlanta. Then they will

change it into biofuel. The fuel will be used to power school buses and other city vehicles.

There may not be enough vegetable oil to power all the vehicles in the world. But changing used vegetable oil into biofuel is better than pouring it down the drain.

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QUESTIONS

1. What are the advantages of using biomass as a fuel?

2. What are the disadvantages of using biomass as a fuel?

3. Do you think biomass will become more important as fuel sources in the future? Explain why or why not.

RESEARCH PROJECT

Research more information about the advantages and disadvantages of biomass fuels. List some of your findings and present them in a short essay or oral report.