

Alternative Energy Sources: Biofuels

biofuel: a liquid fuel, such as ethanol, produced from plant or animal material

There is growing interest in producing fuels that can replace fossil fuels like gasoline. One possible option is the production of biofuels.

Biofuels are fuels produced from virtually any kind of plant or animal material. Grain crops, such as corn, can be grown and then processed to make ethanol (Figure 1). When ethanol is burned, it releases carbon dioxide into the air. Carbon dioxide contributes to global warming. However, this release of carbon dioxide is partially balanced by the carbon dioxide that is removed from the air when the corn plants are

growing. (All plants absorb carbon dioxide from the air during the process of photosynthesis.)

Plants can be grown and harvested year after year. Therefore, biofuels are a renewable source of energy. Biofuels can even be made from waste plant or animal materials, such as wood chips or used frying oil from fast-food restaurants.

Biofuels offer several advantages over many other energy sources. Plants can be grown wherever there is adequate soil and water, and suitable weather conditions. Biofuels are also fairly inexpensive to produce. The technology that converts the plant material to clean, purified fuels is not as expensive as other energy sources (for equivalent energy production).

Unfortunately, crops such as corn often require large quantities of pesticides, chemical fertilizers, and fuel for farm equipment. It can actually take more fossil fuel energy to grow, harvest, and process the crops than is obtained when the biofuels are burned! Biofuel crops also require agricultural land. A large demand for biofuels could take up farmland needed to grow food crops. The price of food could rise because fewer food crops are grown.



Figure 1 Ethanol is a biofuel that can be used in vehicles powered by a fossil fuel.

✓ CHECK YOUR LEARNING

1. What raw materials can be used to produce biofuels?
2. Why are biofuels becoming a popular alternative source of energy?
3. List two possible disadvantages of using biofuels.