**Corn Ethanol**

Biofuels are liquid or solid fuels produced from biomass (organic material containing bioenergy). Biofuels are classified into three “generations,” based on the type of biomass from which they are produced. First-generation biofuels are made from sugar, starch, vegetable oil, or animal fats using conventional technology. Ethanol, a first-generation liquid biofuel used as an alternative to gasoline, is generally made from corn, but it can also be made from many other biological materials. Petroleum-based fossil fuels, like coal and oil, are sources of energy from plants and animals that died millions of years ago and are currently our most common means of acquiring fuel. However, fossil fuels are in limited supply and are quite harmful to the environment as they add greenhouse gases to the atmosphere and increase the likelihood of global warming. Bioenergy obtained through the use of biofuels and biomass is becoming a more sustainable and eco-friendly option to using petroleum-based fuels in everyday life.

So how do we take corn and turn it into fuel? The process of producing ethanol is very similar to that of producing alcohol or vinegar from grains. Plants like corn contain glucose and fructose sugars that can be broken down by yeast to make carbon dioxide gas and ethanol. The yeast uses sugar as an energy source for this process, which is called fermentation. The ethanol is then removed from the mixture, added to gasoline, and sold at gas stations. The state of Oregon requires that gasoline sold commercially must contain 10% ethanol by volume, but future fuels may have higher percentages of ethanol in them (for example, “E85” gasoline is 85% ethanol and 15% gasoline for use in “Flex Fuel” vehicles).

Corn is in the spotlight as a source of ethanol, as it is inexpensive and the United States is the world’s largest producer of corn. In 2012, the United States produced 13.3 billion gallons of ethanol, which directly employed over 87,000 Americans. However, we can use other plants to make ethanol! Why would we want to use other plants? There are some drawbacks for using corn for ethanol production. Corn requires lots of nutrients, usually from fertilizers, which can create a greater burden on the environment than necessary. It must also be grown on land that’s flat and fertile, and there is only so much land we can use to grow corn. We also need corn for human and animal food as well as the production of countless other products. When we have a bad corn year, there might not be enough corn for food AND fuel, and both would become very expensive. We need corn for so many reasons other than fuel!





