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Ethanol from the Field to the Pump

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Ethanol can be made from any plant that contains sugars. These plants are collectively known as feedstocks.

Some plants are easier to grow and make into ethanol. This is why corn and soybeans are the primary crop used for ethanol in the mid-west.

According to the U.S. Energy Information Administration, in 2005 more than 81 million acres of corn and nearly 72 million acres of soybeans were grown.

Because the available land for farming is limited, researchers are trying to produce corn and soybean plants that produce higher yields.

Other plants used for ethanol include: sugar cane in Brazil, sugar beets in Europe, and forestry wastes.

Ethanol is also referred to as ethyl alcohol and is a colorless, odorless, less liquid alcohol. It is made up of hydrocarbon groups bonded to carbon atoms to form \(\text{C}_2\text{H}_5\text{OH}\). It has the same structure, no matter what plant it is produced from.

According to the U.S. Department of Energy, one gallon of ethanol contains 34% less energy than a gallon of gasoline. This is why vehicles get better mileage with gasoline than with E85.

When used in fuels, ethanol is normally mixed with different percentages of gasoline. Most unleaded fuels now contain between 5% and 10% ethanol. These fuels are marked with an E-rating such as E-10 which would have 10% ethanol concentration.

The highest blend of ethanol in the U.S. is E85 or E-85. E-85 can only be used in Flex Fuel vehicles. Higher blends such as E-95 and E-100 are produced and used in other countries. One country that uses this often is Brazil because the hotter temperatures allow for better conditions with higher ethanol percentages.

Ethanol is more efficient at converting corn to fuel than ethanol from other crops. It is also less toxic and easier to mix with water than other alcohols. It is not flammable and produces fewer pollutants. A fuel mixture that contains at least 85% ethanol is known as E-85 ethanol.