

## ECONOMICAL AND ECOLOGICAL BENEFITS OF USING ETHANOL

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The prices for fossil fuel are steadily rising. Many people in Ukraine are being scared by this situation because majority of vehicles in our country operate on gasoline. The best alternative for it is E85. And it is quite possible to convert a vehicle that was designed for gasoline to operate E85.

Ethanol is known as a fuel since the beginning of the XX<sup>th</sup> century. Developing the new models of cars, Henry Ford hoped that ethanol would become the main fuel for automobiles. However, due to the supplies of cheap oil of open deposits, gasoline became principle fuel for transport.

Today in Europe there are already 185 fully operational biofuel plants. Another 58 plants are currently under construction.

At present in Ukraine we have all necessary scientific, technological and industrial conditions for the development of ethanol production.

Ethanol is a product that can be derived from almost any vegetable matter. However, the most widely used ethanol feedstock is corn.

Corn gets energy from the sun through a process known as photosynthesis. Ethanol is made primarily from corn but can consist of wheat, sorghum and potatoes.

Corn is smashed it into flour and runs through a set of screens to create a fine powder. Powder is mixed with water. This mixture passes through steamers that help break apart the molecules. Then, yeast and sugar are added and we obtain the substance, which consists of 15% ethanol. The distillation process results in 100% ethanol (Fig. 1).

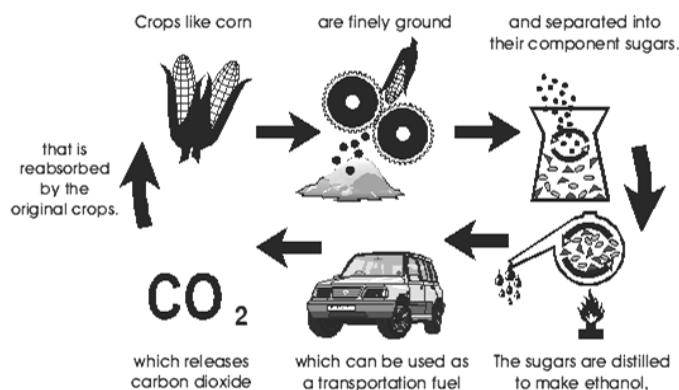


Figure 1 – The cycle of ethanol production

A fuel carrier then combines 85% ethanol with 15% unleaded gas to form E85 fuel for distribution. The fuel carrier arrives at the gas station and pumps E85 fuel into special tanks. Flexible fuel vehicles can refuel at the gas station with E85 or regular gasoline. E85 vehicles emit carbon dioxide, which can be turned into oxygen by new corn plants.

Today, it costs more to produce ethanol than gasoline, because of different tax and government support structures. Federal and state tax advantages make ethanol competitive in the marketplace. If the tax and support structures were the same, the cost of ethanol would be cheaper than gasoline.

Considering the experience of the USA, they imports nearly two-thirds of the petroleum it uses (Tab. 1). Ethanol is made from renewable crops grown in the USA and its use can reduce the need to import oil, promote energy security, and reduce the trade deficit.

Table 1 – World production of ethanol

Country	Production of ethanol, millions liters		
	2003	2004	2005
United States of America	10900	13950	16141
Brazil	14428	15338	16001
France	817	830	909
Russia	745	760	750
Germany	280	270	432
Great Britain	410	400	348
Ukraine	284	290	246
Canada	204	245	231

Wheat will always be important for Ukraine, but we need no more than 20% of Ukraine's land to grow

sufficient wheat and other foodstuffs to feed our population. We have the land, the people and the capacity to become one of the world's greatest exporting countries.

Compared to gasoline, using E85 reduces ozone-forming volatile organic compounds by 15%, carbon monoxide by 40%, particulate matter by 20%, nitrous oxides by 10%, and sulfate emissions by 80%.

Using ethanol can reduce total carbon dioxide emissions. Ethanol is made from crops that absorb carbon dioxide and give off oxygen. This cycle maintains the balance of carbon dioxide in the atmosphere when using ethanol as a fuel.

There are millions of vehicles on the road today. Reducing the emissions from those vehicles provides a significant benefit to our public health and the environment. Using ethanol as a transportation fuel can help accomplish that goal.

Because ethanol may be made from so many different sources Ukraine is now on the brink of a period in which it could enjoy greater agricultural success than at any time in its history, because it is a producer of agricultural commodities and also a producer of feedstocks for the biofuels market domestically.

Even if we use half of our production capacity to meet local needs, we can still build up ethanol plants, pay for the plant investment within three years, and export as much as two million tones of ethanol per year to Europe and other buyers.