

Tristan Seawalt
Ethanol on the Household Level

Each day Americans produce billions of pounds of garbage for landfills, rivers, lakes, and oceans. New York alone contributes over 14,000 tons of waste produced daily. Hundreds of environmental concerns such as rat infestations, polluted rivers, and deteriorating aquatic ecosystems all have a direct correlation with the dispensation of garbage. Ethanol is a viable solution to reduce the astonishing amount of garbage in the United States.

The goal of the experiment was to produce ethanol that can be used for household appliances (like lawnmowers) out of normal household waste items such as rotten produce. The experiment began by fermenting rotten apples, bananas, and strawberries with a special high-alcohol-producing yeast. The yeast died off and the solution was partially purified by filtration. The alcohol content was then calculated by determining the specific gravity of each solution. The apple-ethanol solution produced around 20% alcohol content, the strawberry around 10% alcohol, and banana around 5% alcohol.

It was impossible to test the homemade ethanol with a lawnmower engine because of low concentration; however, 90%, 85%, and 80% ethanol were tested as a substitute to compare with 85% gasoline and on average the ethanol produced around 77% of the power that gasoline produced.

Overall, ethanol production is possible to do at home, but not to a usable extent without distillation. It can be concluded maybe instead of spending billions of dollars on waste management the government could develop public waste centers, to convert rotten organics into ethanol and reduce the billions of pounds of waste produced each day in the United States.