



# Renewable Energy Vermont

## Biofuels Factsheet: *Natural power from crops*

### What are Biofuels?

Biofuels are liquid transportation and heating fuels derived from biological sources, and include biodiesel and ethanol. They are renewable and burn cleaner than fossil fuels.

### How Do You Get Fuel From Biological Sources?

The process varies between fuel types. Biodiesel is produced from vegetable oils or animal fats using a chemical process called transesterification, which converts the oils and fats into a high-energy fuel. Ethanol is produced through the fermentation of naturally occurring sugars, starches, or cellulose in plant stocks. A whole new suite of technologies are being developed to create biofuels from corn stalk and other agricultural crops, along with algae, and agricultural, forestry, municipal and industrial wastes.



The oil from sunflower seeds can be used to make biodiesel



Green Mountain Power maintenance truck being fueled with biodiesel

### Who Uses Biofuels?

Biofuels are used in a wide variety of transport and heating applications, from fueling cars, buses, and trucks across the nation, to powering snowcats that groom the slopes at ski resorts, to heating homes and businesses.

### What Are the Benefits of Using Biofuels?

The carbon emitted by biofuels is sequestered by the growth of biofuels feedstocks—a mostly closed carbon cycle—offering a significant environmental advantage over fossil fuels, according to the US Department of Energy. Biodiesel also offers lower particulate emissions when compared

to petro-diesel. Creating a domestic supply of bio-based transportation fuels will invigorate local agricultural economies, and also offer freedom from the political woes of foreign fossil fuels, and a reduction in the environmental and economic impact of oil exploration and spillage.

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### **Does Use of Plants for Fuel Have a Negative Affect on Food Costs and Availability?**

In 2008, media sources ran many stories on how biofuels caused a displacement of food crops, and a hike in world food prices. While the biofuels industries did play a small role in the rise of food prices, the impact was shared with many other factors, including the devaluation of the US dollar and rising energy costs—the same costs biofuels aim to reduce.



**Canola is another seed crop used to produce biodiesel**

Since then, food price inflation has slowed dramatically, while biofuels production continues to grow: according to the Renewable Energy Policy network for the 21<sup>st</sup> Century, fuel ethanol rose 10%, and biodiesel rose 9% worldwide from 2008-9. The facts are that biofuels come from a wide variety of feedstocks, not just food plants like corn, and new technology will allow us to take advantage of agricultural, forestry and municipal wastes, further diversifying biofuel sources.

#### **Did You know?**

Rudolph Diesel designed his first engine to run on peanut oil, a form of biodiesel, while Henry Ford had plans to fill up his Model T's with ethanol.

#### **Want to Find Out More About Biofuels?**

We've got more information, links and resources at

[www.revermont.org/main/technology/bioenergy/biofuels/](http://www.revermont.org/main/technology/bioenergy/biofuels/)



**Biodiesel is available at the pump in Vermont**

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