Biodiesel FAQs

What is biodiesel?
Biodiesel is the name of a clean burning alternative fuel, produced from domestic, renewable resources. Biodiesel contains no petroleum, but it can be blended at any level with petroleum diesel to create a biodiesel blend. It can be used in compression-ignition (diesel) engines with little or no modifications. Biodiesel is simple to use, biodegradable, nontoxic, and essentially free of sulfur and aromatics.

Why should I use biodiesel?
Biodiesel is better for the environment because it is made from renewable resources and has lower emissions compared to petroleum diesel. It is less toxic than table salt and biodegrades as fast as sugar. Since it is made in the USA from renewable resources such as soybeans, its use decreases our dependence on foreign oil and contributes to our own economy.

How is biodiesel made?
Biodiesel is made through a chemical process called transesterification whereby the glycerin is separated from the fat or vegetable oil. This reaction removes the glycerol component of the vegetable oil molecule (thick and moisturizing), replacing it with methyl alcohol (methanol). In order to achieve this reaction, the methanol is mixed with sodium or potassium hydroxide (lye) prior to being mixed with the vegetable oil. The process leaves behind two products -- methyl esters (the chemical name for biodiesel) and glycerin (a valuable byproduct usually sold to be used in soaps and other products).

Is Biodiesel the same thing as raw or straight vegetable oil?
No! Fuel-grade biodiesel must be produced to strict industry specifications (ASTM D6751) in order to insure proper performance. Biodiesel is the only alternative fuel to have fully completed the health effects testing requirements of the 1990 Clean Air Act Amendments. Biodiesel that meets ASTM D6751 and is legally registered with the Environmental Protection Agency is a legal motor fuel for sale and distribution. Raw vegetable oil cannot meet biodiesel fuel specifications, it is not registered with the EPA, and it is not a legal motor fuel.

What do I need to do to convert my car to biodiesel?
First, you need to have a diesel engine. Any engine that runs on diesel #2 will run on biodiesel. Other than having a diesel engine, there is nothing you need to do specifically to convert your car to biodiesel. For pre-1994 vehicles, it is often said that you need to replace your rubber hoses with synthetic ones, but that is not necessary unless you have a leak.

Will biodiesel eat the rubber in my fuel system?
Biodiesel is a solvent and, as such, it will dissolve rubber. High sulfur (normal) petroleum diesel does this too, but at a much slower rate. The solvency of biodiesel acts much like the Ultra Low Sulfur Diesel (ULSD) that is now being phased in as the diesel standard. Since 1993, diesel engines and equipment have been re-designed, utilizing synthetic rubber with ULSD in mind. Rubber, itself, began to disappear from fuel systems at this same time, resulting in fewer leaks for the diesel and biodiesel user. If you have an older vehicle and believe you are experiencing leaks from worn rubber, you will want to replace the components with ULSD-compatible materials.

Do I need to replace my fuel filter before using biodiesel?
Effects from biodiesel being a solvent may affect your fuel filter in time, depending on the age of your vehicle. Chief among them is that it keeps a fuel system clean. This is true for a newer car. It will keep your new car's fuel system exceptionally clean and in good working order. With an older vehicle (roughly 30,000+ miles of petroleum diesel usage), the solvent action of biodiesel will purge the system of accumulated diesel debris first. This process can take weeks or months. At some point after switching to biodiesel, you may experience symptoms of a clogged fuel filter (i.e., trouble starting, coughing, smoke, poor fuel economy, loss of power). It is best to always keep an extra filter on hand in case you need it. Changing the fuel filter, when you experience the symptoms, will take care of the problem in most cases. A second filter change might be needed in very old vehicles. Regardless, once your vehicle's fuel system is purged of diesel debris, it will stay remarkably clean, thanks to biodiesel's solvency.

Is a gradual increase in biodiesel percentage in my diesel fuel the best way to introduce biodiesel to my vehicle?
There are no scientific reasons to perform a gradual increase in biodiesel. Any blend of biodiesel and diesel can be used in any diesel engine.

If I am on the road and cannot find Biodiesel anywhere, are there problems with using diesel again?
Mix and match however you like, there are no problems with using diesel #2. The terminology for a particular blend is BXXX, where XXX is the percentage (1-100%) of biodiesel. Examples: B5 is 5% biodiesel and 95% diesel #2; B20 is 20% biodiesel and 80% diesel #2; and B100 is pure biodiesel.

How are warranties responding to biodiesel usage?
As the industry matures, more original engine manufacturers (OEMs) are making positive statements on 100% Biodiesel (B100). These include John Deere, Caterpillar, and New Holland, all of whom explicitly warrant the use of B100 in their engines. Some OEMs are taking a more cautious approach, explicitly warranting blends like B20 or B5, while others say, "We neither support nor oppose . . ." Volkswagen and Mercedes sell cars with diesel engines in the United States. There is no problem with warranty issues in Europe; however, here in America they do not support the biodiesel industry. The thing to remember is that the ASTM biodiesel will not hurt any existing diesel engine. If an OEM, such as Volkswagen, wants to deny a warranty based on biodiesel use, legally, they have to show that biodiesel hurt the engine. This is a very compelling reason to use ASTM fuel, especially, in new vehicles.

Since you need to grow vegetable oil, is there an inherent "food vs. fuel " cropland usage issue? Also, is it possible that we will run out of restaurant oil pretty quick?
The "food vs. fuel" argument would be more compelling if it were not for the thousand of acres of fallow cropland in this country. The government pays subsidies to farmers on a good number of these acres in order to keep them fallow, sustaining the crop prices. With competitive uses, the subsidies could be eliminated without hurting farmers. In addition, innovative, new sources of oil, such as algae that can be grown in deserts off of waste carbon dioxide, have yields that far surpass traditional crops. As to the second part of the question, the "fast food" and restaurant business is one of the fastest growing industries in the world and, unless our current eating habits change drastically, it will continue to grow and sustain itself for quite a while. The American "fast food" industry produces over 3 billion gallons of fryer oil yearly and that is increasing. The amount is more than sufficient today. Of course, if everyone switched to biodiesel, all this would change, but the change would speed along technological innovations.

Are there special storage considerations for biodiesel?
Biodiesel will degrade over time. Do not use biodiesel if it has been sitting for months.
Biodiesel can grow mold and cause harm to your vehicle. The fact is that biodiesel stores similarly to petroleum diesel. If you leave lots of access to water and air, then all sorts of things can happen, including algae growth or other kinds of contamination. The bottom line is that you should know the basics of storing fuel before you do it.

What are other applications for biodiesel?
Numerous applications exist for biodiesel other than your vehicle....water heaters, boats, generators, air compressors, smudge pots, kilns, tractors, irrigation pumps, miscellaneous farm equipment, and sawmills. Additionally, it to be used as a concrete slipform, industrial solvent, and agricultural carrier.

I heard that you can make biodiesel at home for 30¢ per gallon. Why would I buy it instead of making it?
The first reason is quality, the second is the convenience. The low costs often quoted in magazine articles are not realistic. They assume free oil, cheap methanol, and no other costs. In reality, a lot of infrastructure is needed. It is definitely possible to "homebrew" high quality biodiesel. It requires knowledge of testing methods, and a serious commitment of time, energy, and equipment. If you are a do-it-yourself type and ready to take up a new hobby, then it is definitely worth considering.

When is the price on biodiesel going to come down?
It is possible that, as the biodiesel industry matures, several things will bring the price down. Some of these are the growth of the market, innovative technology, and possibly new government incentives. However, it is important to understand that the price of biodiesel is an "honest price". There are no hidden taxpayer fees unlike with petroleum diesel. The true cost of a gallon of petroleum fuel has been evaluated at $5.00-$14.00+ per gallon. This high "real" cost is due to things such as taxpayer-financed subsidies to the petroleum industry and the guarding of our pipelines by the military. The potential of the "real" price of petroleum going even higher increases as we aggressively use the military to protect "our" oil supply. We think it is a safe assumption that the price of petroleum will continue to climb. Thankfully, there is no reason to assume the same with biodiesel.

Sources: Yokayo Biofuels: www.ybiofuels.org and the National Biodiesel Board www.biodiesel.org