



# Bio Fuel as a Renewable Energy Source for a Sustainable Environment

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## DESCRIPTION

Biofuel refers to any fuel made from biomass, which might include plant, animal, or algal matter. Due to the ease with which such feedstock material may be produced, biofuel is viewed as a source of renewable energy as opposed to fossil fuels like petroleum, coal, and natural gas. Biofuel is widely marketed as a practical and environmentally benign alternative to petroleum and other fossil fuels in light of rising petroleum prices and growing concern over the contribution of fossil fuels to global warming. The use of biofuels as a viable substitute for gasoline and diesel made from petroleum has gained popularity as a means to utilize renewable biomass energy. The two biofuels that are most frequently utilized are ethanol and biodiesel. Biodiesel is created from vegetable oils, animal fats, algae, and even previously used cooking oils. In its pure form, it can be utilized as a fuel addition or as a diesel additive. Any biomass that has a lot of carbs is fermented to make ethanol. Its main application is as a fuel additive. Aside from the energy benefits, the development of biofuels benefits rural economies that produce crops used in biofuels. Biodiesel is the name given to a clean-burning oxygenated mono-alkyl ester fuel derived from soybean oil or other vegetable oils or animal fats.

Biodiesel is an agricultural production renewable energy source that is easy to use, biodegradable, nontoxic, and essentially free of sulphur and aromatic chemicals. Vegetable oil-based fuel has been used since 1895, when Dr. Rudolf Diesel created the first compression-ignition engine that was designed expressly to run on vegetable oil. Because it shares many characteristics with petroleum diesel, biodiesel can be used in diesel engines without requiring significant adjustments. Alcohol (also known as ethanol, grain alcohol, or EtOH) is a clear, colourless liquid with a distinctive, pleasant smell. It tastes a little bit sweet in diluted aqueous solutions, but burns in more concentrated ones. A hydroxyl group, or OH, is joined to a carbon atom in the molecules of ethanol (CH<sub>3</sub> CH<sub>2</sub> OH), a class of chemical substances. A number of renewable agricultural feedstocks are used to make ethanol, including citrus and potato waste, forestry leftovers, and grains like corn, wheat, and milo. For farmers,

ethanol represents a significant value-added market. Only the glucose, a plentiful and inexpensive component, is used in the synthesis of ethanol from grains. The remaining protein, minerals, vitamins, and fiber are converted into a variety of high-value feed co-products that are marketed to cattle.

Sweeteners, corn oil, gluten feed, and gluten meal are the main byproducts of the wet milling process. Dried distillers grains and corn meal are byproducts of the dry milling process. The domestic ethanol business has far more economic viability thanks to the market for co-products. Bioethanol is ethanol that is produced using cellulosic biomass resources as opposed to conventional feedstocks (starch crops). Aside from wind and water power, biomass, particularly biofuels, has a promising future. Their advantages are as follows: They represent a CO<sub>2</sub>-cycle in combustion, most have lower emissions, are biodegradable, and contribute to sustainability. Efficiency in fuel cost-benefit analysis, engine durability, ease of sourcing, and potential for renewable energy Greenhouse Gases must be reduced, For financial stability, To reduce reliance on foreign oil and to reduce pollution. The traditional agricultural crops maize, soybeans, sugarcane, and oil palms, which are low-diversity biofuel sources, are most affected by some of the drawbacks of biofuels. The North American tallgrass prairie is one example of a highly diversified collection of species used as an alternative. Such high-diversity biofuel sources could replace degraded agricultural land that is no longer productive and instead increase wildlife habitat, lessen erosion, clean up waterborne pollutants, store carbon dioxide from the atmosphere as carbon compounds in the soil, and ultimately restore fertility to degraded lands. Such biofuels might be directly burned to produce energy or, as technology advances, transformed into liquid fuels. The two biofuels that are most frequently utilized are ethanol and biodiesel. Biodiesel is produced by combining several ingredients, including vegetable oils, animal fats, algae, and even leftover cooking oils. It can be used to fuel a vehicle either in its pure form or as a diesel additive. By fermenting any material high in carbohydrates, ethanol is created. The main application is as a gasoline additive.

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In addition to the energy advantages, the growth of biofuels supports rural economies that grow crops for biofuels.

The world largest oil supplies are depleting and becoming more and more expensive to exploit. Making so-called biofuels from agricultural feedstock is one option to replace traditional fuels.

The environmental impact of biodiesel and ethanol throughout the course of their whole life cycles has been shown to be significantly better than that of conventional fuels (diesel, gasoline), assuming acceptable agricultural and climatic conditions.