

## Algae Biofuels: A Dead Resource?

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### I. Introduction

- A. Think of a world with no running vehicles or anything with an engine, cars on the side of the road, abandoned for eternity all because there is no fuel.
- B. The renewable resource aspect and emission decrease could be substantial, but the price and emissions from production could make biofuel a bust.
- C. The chance to save the earth and its atmosphere with a renewable resource should be worth paying more as a consumer for biofuels and other bi-products.

### II. Body

#### A. Background

- 1. The need for new renewable fuels is a must, and the fuels that we have been burning will cease to exist.
- 2. Many attempts have been made to make biofuels cost efficient, but most attempts at this have failed.

#### B. Advantages

- 1. Fewer toxic emissions
- 2. Renewable resource
- 3. Location and size of crops

#### C. Disadvantages

- 1. Price efficiency
- 2. Research funding decrease

### III. Conclusion

- A. Biofuels are the answer to saving our non-renewable resources; we as consumers must be willing to give biofuels a chance.
- B. The chance to save the earth and its atmosphere with a renewable resource should be worth paying more as a consumer for biofuel and its bi-products.

Think of a world with no running engines, cars on the side of the road, abandoned for eternity all because there is no fuel. Today almost every car, truck, or engine runs from gasoline, diesel fuel or some type of oil-based product. These numbers are astonishing, considering the petroleum being used is coming from deep within the earth's crust and is a non-renewable resource. Algae could be the answer to our renewable resource petroleum problem. Algae has been used for a lot of things, but in the last couple of years, researchers have been extracting oil from algae to produce biofuel. This biofuel is an eco-friendly way to produce fuel and would keep humans from unnecessarily robbing the earth by drilling for fossil fuel. In 1925, the founder of Ford Motor Company, Henry Ford predicted, "The fuel of the future is going to come from fruit like that sumac out by the road, or from apples, weeds, sawdust—almost anything. There is fuel in every bit of vegetable matter that can be fermented" ("Ford Predicts Fuel from Vegetation", 1925, p. 24). Using biofuel could make great impacts on the environment. One of the major advantages of algae biofuels is fewer emissions when burned than traditional petroleum-based fuels. Using renewable resources will have a great impact on the environment and keep from depleting our fossil fuel, and not much more land than is already being used for crop growth could sustain the nation with fuel for a year. Many researchers are discovering many ways and places to grow algae crops. Some major disadvantages to biofuel are the price for research and production and whether paying the price at the pump would be worth it to the consumer. The chance to save the earth and its atmosphere with a renewable resource should be worth paying much more as a consumer for biofuel and its bi-products.

Historically speaking, biofuels were the “original gasoline.” When the first vehicle engines were produced, the inventors were not intending the combustion of the engines to be from fossil fuels; they were intended to be run from ethanol made from pine trees and vegetable oil. Henry Ford produced his first car to run on ethanol. Rudolph Diesel created his engines to run from vegetable oil. Biofuels have become an after-thought when it comes to fuel. Once petroleum-based products were introduced at such low prices, it made biofuel production too expensive for the time. The car industries lost interest in biofuel production as a result of fossil fuel production. Not until the last 20 years has more interest in research and development towards biofuels production become a priority. The article “Biomass Power Generation” gives a great view on the renewable energy and environmental possibilities of algae. Biomass can be used to generate electricity, heat, and make fuels. Four processes allow for biomass production: digestion of vegetable matter, thermal processing, combustion of biofuels and anaerobic digestion of animal waste (Burdon, 2005).

Some of the major advantages to algae biofuels: engines would be burning a renewable resource instead of fossil fuel, fewer toxic emissions than petroleum based fuels, the possibilities of different environments for the algae to grow, and the size of algae crops. Using a renewable resource is a big part of the biofuel equation. Using a resource that is grown can solve the question concerning the long-term fuel problem. The emission released into the atmosphere while burning algae biofuel is carbon dioxide ( $\text{CO}_2$ ), but the carbon dioxide is not the same as burning a fossil fuel. The burning of algae releases carbon dioxide that has been recently been obtained from the atmosphere during photosynthesis. On the other hand, the burning of a fossil fuel releases a much more potent form of carbon dioxide, which was gained

millions of years before when the fossil fuel was formed. The carbon dioxide cycle continues with photosynthesis. Algae uses carbon dioxide to produce food and releases oxygen as a bi-product. The algae can take the carbon dioxide emission and use it to produce the next cycle of algae crops. Researchers are trying all different ways and places growing these crops.

Federal researchers from the U.S. Department of Energy report it would take only 15,000 square miles -- less than 1/7 the area now used to harvest all the corn across the country -- to produce enough algae fuel to replace all of our petroleum fuel. This 15,000 square mile area is about half size of Maine.”

(Radwin, & Dugan, 2013, p.6)

Algae can live almost anywhere or under any condition; however, the Southeast is a prime area for growing algae, due to the warm weather and humid conditions. Researchers have even started to explore the ideas of deep seawater growing, wastewater growth and agriculture crop growth.

Algae biofuel does have a couple disadvantages pertaining to the price at the pump and the expense to research the biofuel. It is much cheaper to make petroleum than to make a biofuel. Biofuel has an expensive production cost, unlike fossil fuel. The price of sustaining a long-term biofuel processing facility has a very high price tag. Biofuel takes time to be grown, harvested, and have oils extracted. The biofuel is produced and then hauled to the filling station. All these processes take time and money, which in the end are paid for by the consumer. Per Matthew DiLallo, an author for the website *The Motley Fool*, “Americans consumed 140.43 billion gallons of gasoline in 2015, or about 384.74 million gallons each day” (2017). The numbers just include the American consumption rate, not the entire world. Prices

would also be considered by availability of the feedstock crops. Whereas soybeans and other food crops can be used as biofuels, these are more susceptible to parasites, sunlight, and other nutrient levels. Prices would then fluctuate more based on availability more than production costs. Many researchers are finding out that the funding that was once received is beginning to dry up. Large corporations are no longer contributing large amounts of funding for just the research of biofuel. The corporations funding the research have come to realize that funding the biofuel projects is not paying off in the end. Funding has been cut back to researchers in the thoughts that biofuel is a lost resource. Researches are using every part of algae to make money back that may have been lost, in hopes of finding new money in the bi-products of algae. "The funding is still there, but more for the bi-products of the algae and not for the more expensive biofuels" (Meiling, 2015). Without government funding and incentives, the algae biofuel research and development will be a bust. For algae to become a player in the biofuel industry, the government would have to implement financial incentives and regulatory changes to bring more research (Rosenthal, 2009).

In conclusion, biofuels are the answer to saving our non-renewable resources. We as consumers must be willing to give biofuel a chance. Having a renewable resource that is dependable and resistant to most elements is going to be a key in keeping cost fluctuation to a minimum and production cost down. Reducing the carbon footprint on the atmosphere is going to be the biggest factor in biofuel. The prices that we as consumers would have to pay are minute in comparison to the positive impact on the environment, but with government and corporation funding, production costs can stay low, which then lead to a lower price at the

pump. The chance to save the earth and its atmosphere with a renewable resource should be worth paying more as a consumer for biofuel and its bi-products.

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