

Spring 2015

Biodiesel: The Next Fuel?

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Recommended Citation

Adams, Carissa; Liao, Victor Y.; and Tolbert, Coleman, "Biodiesel: The Next Fuel?" (2015). *Focus on Creative Inquiry*. 103.
<https://tigerprints.clemson.edu/foci/103>

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Biodiesel: The Next Fuel?

Carissa Adams, Victor Y. Liao, Coleman Tolbert

Abstract

The focus of this project is to research the environmental and economic benefits of biodiesel. The motivation for this project came from the question of: "Does the cost of biodiesel justify the pollution reduction?" Research had to be done to gain the facts and knowledge to support the cause. This includes finding possible sourcing, pros, cons, costs, fuel mixes, environmental, and mechanical information as it pertains to diesel engines and even the potential use in the CATbus fleet. Secondly, CATbus would have to be contacted in order to gain their thoughts and share the supporting information on biodiesel. The outcome of this project should show that environmental effects are better when using biodiesel versus regular petroleum diesel, and that there is less impact on human life. Our conclusion is that we recommend CATbus to use biodiesel over regular petroleum diesel. Thanks goes to our advisor Gary Gaulin and the Creative Inquiry program for making this project possible.

Pros

- ❖ Reduces CO₂ emissions, even helps oxygenate the air
- ❖ Cleaner to produce than fossil fuels (not in ethanol's case)
- ❖ Helps create jobs in its production
- ❖ Helps lessen dependence on foreign oil

Cons

- ❖ Could divert farming from growing food, increasing food prices
- ❖ Currently more expensive
- ❖ Slight loss in MPG
- ❖ Sometimes production can be just as bad as using fossil fuels (fertilizers, pesticides)
- ❖ Land usage in growing



Feedstock images from <http://www.nbb.org/results/project-showcase/feedstock>

How Its Made

Biodiesel and other biofuels can be made from almost any living matter. Currently the largest sources come from corn, sugarcane, and vegetable oil. New methods are being discovered constantly, with some being better than others for a variety of reasons. Some new and promising "feedstock's" include algae, cooking oil, solid waste from dumps, and even production by black bot fly larvae. The fuel itself is extracted from the oils created by these sources.



CATbus?

In fitting with Clemson Universities Solid Green Initiative, there is a possibility that we could run the CATbus fleet on biodiesel. This would help Clemson do its part in reducing its carbon footprint, as well as creating a positive image of sustainability in the community.



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