Saving the Day: Biodiesel for Agriculturists

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Abstract:

The farmer, ranchers, and agriculturists that make up the backbone of the American economy are suffocating due to the greenhouse emissions and rising prices of conventional diesel fuel. Biodiesel, an EPA-approved motor fuel made from refined animal fats and/or oilseed crops, is making its way into the scene as the pivotal tool to aid those struggling. Extensive research from experts-including case studies from various companies-has found biodiesel to be "America's Advanced Biofuel."

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Everyone, imagine yourself watching a movie on the silver screen. You nestle down in the comfy theatre seat that seems to engulf you, the lights go dark, and the film begins rolling. The show follows the typical format: in the beginning, we meet our noble hero…but to the dismay of all moviegoers some great plague befalls him or her. In the end, though, a triumphant event or thing makes its presence known and helps to bring our hero out of the darkness. A classic happy ending and the hero rides off into the sunset.

The movie world and real world are not too far apart. Our heroes are farmers, ranchers, and agriculturists. Unfortunately the people who feed us, clothe us, and make up the backbone of the American economy face a problem: America's present fuel situation. Noxious emissions and crippling diesel prices are making our valiant warriors of the fields and plains stagger. Thankfully a possible solution to the problem is working its way into the scene by leaps and bounds: Biodiesel. In this presentation, we'll take a moment to further evaluate the problems at hand, learn the ins-and-outs of biodiesel, and discover how biodiesel can aid our heroes in the industry of agriculture.

Fuel Problems Facing Today's Agriculturists

To begin, we'll take a closer look at the adversity our protagonists face. Information flows freely through the media about the toxic gasses from petroleum-based fuel. However, you do not need all these facts to know diesel is hard on the air-just stand around an idling dually for five minutes. Diesel is a dirty burning fuel, and is widely used in agricultural pursuits. Consequently, one-third of all greenhouse gas pollution comes from agriculture, according to *Nature*, a leading international journal of science (Gilbert, 2012). Every fuel-intensive action in

agriculture can be blamed for expelling these emissions (Bowen, 2013). From hot smoke to cold hard cash, wallets are burning as well. Fuel costs-particularly the cost of diesel-are sky high and rising. It is no wonder then that, out of every consumer dollar spent on food, only 19 cents comes back to the producer (TheCourier, 2011). So the million-dollar question: where's the rest of the money? The Renewable Fuels Association reports that the largest portion of every dollar goes to fuel-intensive services such as production, transportation, and packaging (Report, 2011). In 2005 the average cost of a gallon of #2 diesel was $1.89. That cost has experienced a 77% increase since, bringing the average price to a hefty $3.43 per gallon. Just to put that into perspective, a 310 horsepower tractor burns roughly 13.6 gallons of diesel per hour. Plowing a field or hauling hay will cost an individual almost $50 in just an hour of work, and in the ballpark of $400 for a single 8-hour day (Dorn, 2013). Ouch. The Economic Research Service of the USDA released a report informing the public just how endlessly this pain will stretch. Higher energy expenses are projected to drive up the price of both crops and meat each year through at least 2018 (Sands, Westcott, and Price, 2011). Between greenhouse gasses and mounting expenses, our heroes face some pretty serious threats in this film.

Background Information on Biodiesel

But enough about problems! We can talk about problems all day and it won't solve a thing. Let's talk now about a possible solution for our heroes: Biodiesel. Experimentation with and production of Biodiesel began in the late 1990's. At that time, about 25 million gallons were produced annually. Just last year, 1.8 billion gallons of Biodiesel were pumped out. It is hailed as America's advanced biofuel; a clean burning and highly efficient means of energy (Biodiesel.org, 2013). So what is it? Biodiesel is a diesel fuel made from used animal fats, tallows, vegetable oils, and oilseed crops. It is rendered by converting the oils and fats into

chemicals and reacting them with an alcohol-usually methanol-in the presence of a hydroxide catalyst in a process called transesterification (USDE, 2013). After the process is completed, the producer has fresh B100 and the bi-product Glycerin (which is used in pharmaceuticals and cosmetics). Contrary to popular belief, Biodiesel is not just raw vegetable oil. On the contrary, it meets ASTM D6751 industry standards to a tee, and is registered with the EPA for sale and distribution as a motor fuel (Biodiesel.org, 2013). There are currently around 200 Biodiesel plants nationwide-from Washington State to Texas to North Carolina. Entering onto the scene is that special tool which will aid our heroes in their struggles.

How Biodiesel Can Improve Today's Fuel Situation

We know the issues at hand; we have learned more about a potential fix. So how will Biodiesel save our stars of the soil and sod? To begin, Biodiesel is environmentally sound. Biodiesel.org explains that this fuel reduces greenhouse gas emissions by 86% when compared to petroleum diesel. It is also the first and only alternative fuel to have fulfilled every health effects testing requirement of the 1990 Clean Air Act. Being such a clean source of energy, it is a premier option for immediately addressing pollution and climate change (Biodiesel.org, 2013). Then you have the financial aspect of fuel. Springboard Biodiesel, for example, is a company which sells production equipment to farmers looking to create their own Biodiesel. Several case studies from Springboard show these agriculturists are spending $1.52, $1.25, $0.59 cents per gallon on B20-B100 blend fuel (Springboard Biodiesel, 2013). Biodiesel is economically advantageous on a much larger scale, as well. The industry supported over 62,000 jobs just last year (National Biodiesel Board, 2014). The Biodiesel business is also supplemented $3.1 billion in GDP (BioWillie, 2013). Granted, everything has a catch; the hero simply cannot get off Scott-free, right? Biodiesel, for all its benefits, has two major downsides. I conducted an interview

with Mark Roberts, CEO of Springboard Biodiesel. According to his experience, the only major financial drawback to Biodiesel is the initial upfront expenditure. If a farmer or rancher choses to produce Biodiesel in-house, they must have the initial finances to purchase the necessary production equipment. Special attention must also be paid to the cost-per-unit of their feedstock if they are using oilseed crops, or the availability of animal fats and tallows. All this must be factored in with any other overheads, such as land and labor. Thankfully, careful management of all these capital elements will help soften expenses (Roberts, 2013). The other burden encountered with use of Biodiesel is its tendency to gel at low temperatures. The good news is that there are many fuel additives for Biodiesel-as well as countless home remedies-for combating this issue (Addison, 2002). With few major yet manageable imperfections and limitless benefits, Biodiesel is the triumphant piece to save the heroes of America.

Conclusion

So today we have reassessed the problems with our mainstream fuel situation, familiarized ourselves with Biodiesel, and discovered how Biodiesel can save the day. We're not there yet, but the film is still rolling. Thanks to the production and use of Biodiesel, that happy ending for our heroes is drawing near. Thank you.

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