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# Corn Ethanol, A Bad Idea

12/12/2014

Course: ENSC230

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Corn ethanol appears to be doing wonders for the United States. It produces less greenhouse emissions than gasoline, while keeping fuel prices lower. Everyone gets to feel the benefit here in the US, and farmers get to sell their corn at higher prices. This sounds great, if it wasn't consuming more resources and possibly increasing greenhouse emissions. What if we could have a fuel that not only reduced gasoline prices but also reduced our environmental impact? With how much corn ethanol is being promoted, is it really doing its job of reducing greenhouse gases, and what about the increase in resource consumption?

So how did we get here? In 1978 the US government signed the Energy Tax Act of 1978, which gave farmers a 40¢ per gallon tax break on biofuel produced (Green Plains, 2008). They left it open to all biofuels; algae, corn, soybean, sugarcane, switchgrass, etc. When the Energy Policy Act of 2005 was signed, the bill included Renewable Fuel Standards. These require a minimum percentage of biofuel mixed within domestic fuels. Since the US has a comparative advantage in corn production, corn ethanol has been developed whereas cellulosic ethanol has taken a backseat. What has been forgotten though is to write sustainability standards into these policies.

*I like the idea of talking to people who are growing America's energy security. I like the idea of policy that combines agriculture and modern science with the energy needs of the American people (Bush, 2006).*

Bush labeled it as an energy security solution. Obama has promoted it as an environmentally friendly way to reduce greenhouse gases. Were either of these the reason for them to push for corn ethanol, or just politics? The 2014 farm bill promises \$134 billion towards farmers over the next decade (Palmer, 2014). According to the National Agricultural Statistics and Service corn yield reached 173.4 bushels per acre in 2013, an all time high. With such high yields and high corn prices, is this much support needed?

Supporters of corn ethanol argue that it is more environmentally friendly. If you ignore the increased resource use, of course it is. The problem is these can't be ignored. Increased demand has caused marginal land to be used, and traditional land worked more often. This diminishes soil quality, making it less productive. To fight this, farmers spread more fertilizer and increase irrigation for larger fields. Increases in fertilizing causes more eutrophication, and increased water use depletes reservoirs. Using corn stover makes the situation worse. When stover is removed, nutrients the soil once received annually are no longer there. This reduces productivity in years following if fertilizing isn't increased.

"Agriculture is the backbone of this country. Shouldn't we be supporting our farmer's way of life?" Being one generation removed from the farm, I understand how important agriculture is to this country. At what cost do we support bad practices though? Current climate predictions shift America's breadbasket into northern states and Canada. Out of anything farmers should be doing all they can to mitigate greenhouse emissions. This would include stop promoting the production of corn ethanol.

What do we do to meet the RFS then you may ask? Algae, switchgrass, sugarcane are all alternatives to current sources. Some of these sources are currently being scaled up to mass production levels. "Well doesn't this mean corn ethanol is years ahead of the alternatives?" Yes... for now. If you consider the amount of assistance agriculture gets when compared to the alternatives, it's no wonder corn ethanol is so far ahead.

Algae may be a newcomer but it has an upside that is greater than any other source in the US. According to the Office of Energy Efficiency and Renewable energy "Algae could potentially produce up to sixty times more oil per acre than land based plants." Just think of where we could be if cellulosic ethanol R&D was adequately funded. As fuel prices continue to decline investment for R&D is likely to go down. To combat this we could add a fuel tax on ethanol to allow for cellulosic ethanol to become more competitive.

For the future of our energy security, our climate, and our farmers we must shift our focus away from corn ethanol. We cannot continue to rely on a system that consumes as many resources as it does. The elimination of corn ethanol, and promotion of cellulosic ethanol are policies that are needed to preserve or improve our environment for current and future generations.

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