

Title: Woody Biomass Use Can Increase the 'Greenness' of BioDiesel Production

There has been much recent discussion concerning biodiesel production and the use of agricultural crops to provide the raw material to manufacture bio-fuels. The justification for producing and substituting biodiesel for 'petro'-diesel, a fossil fuel, is twofold: (1) it will decrease the amount of greenhouse gases released during the combustion of fossil fuels in the transportation sector; and, (2) it will decrease our dependency upon foreign source of oil production.

The ongoing discussion on the merits of biodiesel over petro-diesel, however, ignores the important role that our forests need to play in biodiesel production in order to create a truly green fuel. Forest biomass and waste wood products need to be included when discussing biodiesel production since methanol is a key component of that production. Approximately 10% of the weight of biodiesel is methanol, or wood alcohol, while the remaining 90% is oil processed from agricultural crops according to a 2003 report published by the U.S. Department of Energy's National Renewable Energy Laboratory.

Pure bio-oil fuels tend to be too thick to be directly used as an automobile fuel. Without the methanol, bio-oil fuels pumped into a car would result in gumming up fuel systems, filters, and the engine parts. So oils from agricultural crops cannot be solely used in combustion. However, the addition of methanol to bio-oil reduces the size of the gummy molecules so that the resulting liquid is much more suitable as a diesel fuel. Currently, most of the methanol being used to produce biodiesel derives from natural gas (another fossil fuel) since it was the most economical source of this alcohol until quite recently. The economic cost of using biomass to produce methanol has recently changed because of technological breakthroughs increasing the efficiency and speed at which biomass can be converted to an alcohol. In addition, one has to wonder if we are truly manufacturing a green fuel alternative when a key component requires a natural gas extracted from fossil fuel.

Today, technological developments in the conversion of biomass to other products have occurred because of the need to mitigate climate change. These technologies allow us to convert biomass efficiently and economically into methanol. For example, one ton of dry biomass can be converted to produce about 157 gallons of methanol because conversion efficiencies approach 50% today. This efficiency of conversion means that small diameter stems of trees and wood waste materials, that would normally go to a landfill or were combusted to produce steam to generate electricity, can now be collected in a sustainable manner to substitute for natural gas production of methanol.

Biomass use should be encouraged when it is used in an environmentally friendly and in a sustainable manner. Done properly, it will provide greater environmental benefits than if the biomass was left untouched in place or is discarded as waste. The biomass driven strategy does not require extensive cutting of trees but the collection of waste materials or small sized stems and limbs of trees. There are many reasons that justify the removal of biomass materials from our landscapes. The risk of not removing the excess biomass and

marginal wood is high because they contribute to forest fires and insect problems that plague our forests in many regions. The only current alternatives to this are prescribed burning within forests or the continued transportation of biomass wastes to landfills. Neither one of these options are good for the environment or public health. Even forests in the wildland-urban interfaces need to be managed to remove wood material that increase the risk of these areas to catastrophic fire. Biomass materials also have to be removed from our landscapes being managed for conservation purposes to eliminate woody invasive species such as Scotch broom from native habitats or to restore the habitat qualities of highly altered forest environments.

The discussion of biodiesel production needs to include forests or wood wastes as part of the strategy to increase the use of 'green' fuel. Combining the agricultural production of oils with the use of wood materials to produce the methanol would result in biodiesel being stamped as the completely renewable fuel of choice. Producing methanol regionally also should accelerate the rate at which biodiesel becomes a more widely available fuel and should decrease the cost at which biodiesel is sold.

In addition, biodiesel production can keep our rural resource-based communities from becoming the ghost towns of our generation. These communities have watched their economies, populations, and future potentials fade as the industries that have traditionally provided their economic base have disappeared. If nothing comes along to replace these fading industries, such as biodiesel production, rural communities in the United States are going to look considerably different. In addition, urban areas are going to have to face the reality that someday soon of all of their energy and natural resource needs will be supplied by overseas entities.

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