



Issue Briefing: The Role of Food Crops as Transportation Fuel

Concerns about the use of food crops such as corn and soybeans to make “biofuels” have been growing due to the sharp increase in both food and fuel prices, along with recent studies that suggest the production of these fuels may increase global warming pollution. Based on current evidence, the Union of Concerned Scientists (UCS) supports moving away from corn- and soy-based fuels towards biofuels made from waste or other resources that can be obtained in a more responsible and sustainable manner. These “better” biofuels hold significant promise and, in combination with other sustainable low-carbon fuels (e.g., renewable electricity, hydrogen), must be given effective government support if we are to reduce global warming pollution from all economic sectors, including transportation.

Meeting the Demand for Food and Fuels

The rapidly expanding use of food crops to make fuel contributes to higher food prices, ecosystem degradation, and land conversion leading to increased global warming pollution. The global agricultural system is already straining to meet the demands of a growing and increasingly affluent population. Producing even more corn and soybeans for use as fuel will not only increase global warming but aggravate other serious problems associated with our current agricultural system as well: pollution of our air, water, and soil, and depletion of water resources and soil carbon and nutrients.

Since the most productive land in the United States is already in use, added demand for corn and soybeans to make fuel is contributing to the clearing of additional land and, by raising global commodity prices, inducing farmers in other countries to plow up sensitive ecosystems (including rain forests in South America and Southeast Asia that have a high degree of biodiversity).¹ For some carbon-rich land types such as forests, a great deal of global warming pollution can be released from the soil and trees when the land is cleared and plowed. The resulting emissions can overwhelm the global warming benefits of using biofuels instead of gasoline. Switching away from food crops as a fuel feedstock would reduce demand for corn and soybeans and lessen incentives for farmers here and around the world to expand the agricultural acreage needed to grow these crops.

Harvesting Better Biofuels

Despite the problems associated with today’s food-based biofuels, we can make tomorrow’s biofuels in a more sustainable manner using new technologies and feedstocks. We can avoid driving food prices even higher by making fuel from waste and non-food crops, which would also reduce global warming pollution. For example, mixed native grasses have the potential to provide biomass resources from marginal land without extensive use of chemical fertilizers or pesticides, which would help maintain wildlife habitat.

However, merely switching to non-food crops will not guarantee that all of the problems currently associated with biofuels can be avoided. If productive agricultural land is converted

¹ See: UCS. Land use changes and biofuels. Online at http://www.ucsusa.org/clean_vehicles/technologies_and_fuels/biofuels/addressing-the-global-warming.html.

from food crops to bioenergy crops, the potential benefits of biofuels could be reduced or eliminated. The best opportunities for increased biofuel production would complement existing land uses and protect the environment.

A Successful Path for Biofuels

The challenge before us is to separate good biofuel alternatives from bad ones—that is, to find policies that help us reach our climate and fossil-fuel-replacement goals without damaging our food system and environment as a whole. There are four key elements to getting biofuels on a successful path:

1. We already have a good foundation on which to build, courtesy of the groundbreaking global warming pollution standards included in the Renewable Fuel Standard (RFS) that was part of the 2007 energy bill. The RFS requires that biofuels from new facilities reduce global warming pollution based on a comprehensive assessment of the impact the fuel will have over its full life cycle (including emissions stemming from changes in land use). The RFS also creates a market for advanced biofuels, such as cellulosic biofuels made from non-food biomass resources.² But there are limitations to the RFS: it only covers about 10 percent of the fuel used for cars and trucks, and it exempts ethanol made at existing facilities from any global warming pollution standards.
2. The United States should improve upon the RFS by passing a comprehensive fuel policy that holds all fuels, including biofuels, accountable for their global warming pollution. UCS supports a low-carbon fuel standard that would require fuel suppliers to reduce their global warming pollution on a per-gallon basis, while providing maximum flexibility for different pathways and innovative solutions to reach this goal.³ This policy promotes low-carbon alternatives such as cellulosic ethanol and protects against highly polluting fossil fuels derived from tar sands or coal.
3. The United States should tie public dollars for biofuels to performance. The federal government has already invested substantial resources to promote biofuel production and use, including a tax credit of \$0.51 per gallon and other subsidies and tariffs. To ensure this public money is well spent, the tax credits, subsidies, and tariffs should be reformed to provide performance-based incentives for the least polluting, most sustainable low-carbon fuels. The United States should also provide aggressive funding for research, development, and production of non-food-based biofuels that will reduce global warming pollution and improve the sustainability of our food system.
4. Finally, the United States should develop policies that include broad sustainability criteria for biofuels and other fuels. Such criteria would extend beyond global warming pollution to also reduce deforestation, avoid invasive species, and encourage

² See: UCS. The 2007 Renewable Fuel Standard. Online at http://www.ucsusa.org/clean_vehicles/solutions/advanced_vehicles_and_fuels/2007-renewable-fuel.html.

³ See: UCS. Issue brief: Low carbon fuel standard. Online at http://www.ucsusa.org/assets/documents/clean_vehicles/ca-low-carbon-fuel-standard-fact-sheet_final.pdf.

best practices in agriculture, forestry, land use, and the preservation of natural resources, including soil productivity, clean water, clean air, and biodiversity.

Given the enormity of our climate challenge, we need to take advantage of the opportunity presented by biofuels. Going forward, estimates of potential biofuel production volumes must fully account for the global nature of agricultural markets; the land resources needed to produce biofuel crops, foods, and other products; and the impact of agricultural expansion into natural ecosystems such as forests. At an appropriate scale and with adequate safeguards, biofuels can play a productive role in a low-carbon future.

*For further background on this topic, see our list [Further Reading on Biofuels](#)
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