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Does canola biodiesel help or hurt climate?

Greenhouse gases - Research differs significantly on the fuel's net impact

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Last year, four Canadian researchers said that swapping canola-based biodiesel from Canada for petroleum diesel reduces greenhouse gas emissions by at least 85 percent.

Their conclusion: The biofuel's environmental benefits are "overwhelming."

This summer, four different researchers said producing biodiesel from the fertilizer-heavy crop would generate up to 70 percent more greenhouse gas emissions than using regular diesel.

Their conclusion: The use of some crops for biofuels, canola in particular, can "readily" lead to more greenhouse warming.

Because canola oil is one of the top biofuel crops worldwide, the real costs and benefits of converting the oil seed to fuel are important globally. They're also important in the Northwest.

Oregon and Washington farmers see canola as one of their best bets for growing biofuel feedstocks. A Seattle company, Imperium Renewables, just opened the largest biodiesel plant in the country in Grays Harbor, Wash., running it on Canadian canola.

But the science on canola biodiesel is far from clear.

The main problem is that canola takes a lot of nitrogen fertilizer to grow. Soil microbes react with the fertilizer, causing some of the nitrogen to convert to nitrous oxide, a greenhouse gas that traps 300 times more heat than carbon dioxide.

The debate is over how big that portion is. The U.N.'s Intergovernmental Panel on Climate Change says that, in general, about 1 percent of the fertilizer applied to the crop converts to nitrous oxide.

But this summer, a group of researchers headed by Paul Crutzen, a Nobel Prize winner in chemistry, said that number is "severely underestimated" and should be more like 3 percent to 5 percent.

That was bad news for canola biodiesel.

At best, the reduction in carbon dioxide emissions using canola biodiesel instead of petroleum diesel would offset the nitrous oxide emissions from the fertilizer. At worst, the nitrous oxide would push emissions 70 percent higher.

Critics say the researchers' draft report (<http://tinyurl.com/ywbft6>) overestimates man-made emissions of nitrous oxide and pins too much of the emissions on agriculture. But it generated headlines as the latest in a string of reports questioning biofuel's benefits.

Reaching the opposite conclusion, a group of Canadian researchers says the Intergovernmental Panel on Climate Change's estimate is 10 times too high, based on actual measurements of nitrous oxide emissions from canola grown in Canada's western prairies in the 1990s.

That's because the prairies, where most of Canada's canola is grown, have dry soil, the researchers said. High fertilizer prices also have reduced fertilizer use.

The study (<http://tinyurl.com/22b2yv>), supported by the Canola Council of Canada, used the lower nitrogen conversion rates to estimate savings of 85 percent or more for the country's canola biodiesel. But, the

study acknowledges, there's "significant uncertainty" about nitrous oxide emissions.

For now, that'll have to do.

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