

Food for Fuel?

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Summary: Former Senator Tom Daschle argues that corn-based ethanol offers many benefits -- and few downsides for food stocks. Runge and Senauer reply.

Topics:

Energy, resources and environment

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How Biofuels Could Starve the Poor

By C. Ford Runge and Benjamin Senauer

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MYTH VERSUS REALITY

Tom Daschle

The article "How Biofuels Could Starve the Poor," by C. Ford Runge and Benjamin Senauer (May/June 2007), recycles the "food versus fuel" mythology that has been rebutted time and again. Despite the authors' allegations, the facts are clear: U.S. corn is used to feed mostly animals, not people; converting the starch from a portion of the U.S. corn crop into biofuels is an efficient way to reduce the United States' dangerous dependence on imported oil; and the recent firming of grain prices in the United States -- and therefore the world -- will help, not hurt, farmers in food-deficit nations. Most important, current production facilities for grain-based biofuels are a critical platform for launching the next generation of advanced cellulosic and waste-derived biofuel technologies.

To their credit, Runge and Senauer recognize that ending the United States' suicidal dependence on fossil fuels will require a comprehensive energy policy. They are absolutely right: any solution to the world's twin energy and climate crises will need to be broad and multifaceted. Existing energy sources must be used more efficiently through increased fuel-efficiency requirements, better building codes and appliance standards, and market-driven demand-side management programs, such as ones that give utility companies profit incentives to increase energy efficiency and conservation. The playing field for renewable sources of energy -- such as wind, solar, and geothermal energy -- must be leveled with tax incentives that reduce the production costs for renewable-energy technologies. And the increasingly perilous costs of climate change (which is caused by the unbridled use of fossil fuels) must be stemmed with a binding international regulatory framework for greenhouse gases that includes the United States and China, the world's largest emitters of such gases today.

Unfortunately, Runge and Senauer distort the central role that biofuels will play in any such comprehensive solution, both in the United States and abroad. Far from starving the world's

poor, as they claim, biofuels can help the world meet its energy needs without jeopardizing food security.

The current generation of biofuels has significant environmental benefits. The U.S. federal policy that requires minimum levels of oxygenates in U.S. gasoline has improved air quality in the United States while increasing the use of biofuels -- two of the primary benefits that Senator Bob Dole and I sought when we successfully pushed for that policy in 1991. The current generation of biofuels also helps reduce the emission of greenhouse gases. An interesting analysis released by the Natural Resources Defense Council last May showed that corn-based ethanol outperforms gasoline when the two fuels' full production and use cycles are compared. Innovation in the biofuel industry is leading to even greater greenhouse gas reductions, regardless of the feedstock.

Runge and Senauer themselves argue that the next generation of biofuels will dramatically lessen greenhouse gases. But not content to highlight these benefits, the authors stack the deck by focusing on the costs of developing these fuels. The problem is that their cost predictions take no account of the effects of innovation or of policy proposals that appear likely to be implemented over the next several years (and which they support).

One such proposal is for a U.S.-wide carbon cap-and-trade system, which would immediately provide an economic advantage to fuels with lower carbon content. Although such a system is unlikely to come into being under the current president, most analysts believe that it will by 2012. Another significant proposal is for new state and federal incentives for low-carbon fuels, such as the program now being implemented in California, which is set to take full effect by November 2008. By mandating that a growing percentage of the market for transportation fuel be set aside for low-carbon fuels, such programs would unleash a tidal wave of private-sector investment and technological innovation that would ultimately bring about something of a low-carbon-fuel Manhattan Project. In stark contrast to the head-in-the-sand policies of the Bush administration, the example of these policies could serve as a beacon to the rest of the world and encourage similar behavior elsewhere, including in China and India.

Under either of these policies, both the costs associated with carbon-intensive fossil fuels and the incentives for innovation in low-carbon fuels would dramatically increase. Thus, it is reasonable to expect cellulose-based ethanol to be competitive far sooner than in ten years, the time frame predicted by Runge and Senauer.

Having lived through three decades of debates about ethanol, I can attest that the critics of biofuels have often warned of a coming food crunch as a result of the competition for inputs needed to produce both food and fuel. One of the most memorable such predictions arose in 1980, during my second term in Congress, in the form of a Worldwatch Institute pamphlet entitled "Food or Fuel: New Competition for the World's Cropland." I was among those who rebutted the argument, which was authored by Lester Brown, and predicted that U.S. farmers and technology would more than keep pace with demand not only for food and feed but also for fuel. Over the next several decades, the doomsayers were proved wrong: productivity gains for corn averaged nearly three percent per year, and the annual U.S. corn crop increased from approximately seven billion bushels in 1980 to nearly 12 billion bushels in 2006. During most of that time, corn prices were far below the actual costs of corn production, and taxpayers spent billions in direct payments to farmers in order to maintain the nation's "cheap food" policy. Last

year, the Worldwatch Institute released a report warning of the potential effect of biofuels on food but highlighting, above all, their benefits for farmers and the climate.

In August 2005, President George W. Bush signed the Renewable Fuel Standard Program into law, and U.S. ethanol production is now expected to approach eight billion gallons by next year. As the public's attention has begun to focus on the need for alternatives to oil, the major oil companies have become concerned. Unsurprisingly, warnings of a looming food-fuel tradeoff have crept back into the national debate.

Yet I am convinced that just as the crunch never came during the past 25-plus years, it will not come now.

A recent analysis of the Bureau of Labor Statistics' food pricing data by the National Corn Growers Association showed that annual inflation for a basket of corn-intensive foodstuffs, such as dairy products, chicken, and pork, was less than general annual food inflation. And so even though the price of yellow corn in the United States has gone from \$1.98 per bushel in January 2006 to \$3.76 per bushel in March 2007, the increase has not been passed on to U.S. consumers of products such as milk, cheese, chicken, and pork.

There are a number of possible reasons for this (none of which Runge and Senauer cite). One of them is that only about five percent of the U.S. corn crop is used directly for human food; much of the remaining 95 percent is used to feed livestock. Another reason is that ruminant animals, such as beef and dairy cattle, get more nutritional value out of feed made from ethanol coproducts than out of other feed. The benefits are less great for monogastric animals, such as swine and poultry, but the market can still get the most bang for the bushel by converting the starch in corn into ethanol and then using the protein coproducts from ethanol plants for ruminants' feed rations.

To be sure, short-term market gyrations will require adjustments, as was the case in response to the recent hikes in prices for tortilla flour in Mexico cited by the authors. But this will be a short-lived challenge because the market will rapidly respond to the increased demand for corn by encouraging farmers to plant more of it. The U.S. Department of Agriculture estimates that there will be as many as 90 million acres of corn planted this year in the United States and tens of millions of acres more planted in South America and elsewhere. If history is any indication, productivity per acre will increase year after year as technology improves the characteristics of seeds, including their starch content and ability to ferment. And in the medium term, of course, feedstocks other than corn, including nonfood cellulose, will become increasingly important as inputs for biofuels.

The legislation promoting a low-carbon fuel standard now being considered by Congress will attract investment for next-generation facilities that convert animal waste and other waste (replacing fossil fuel inputs) into biogas and biofertilizers. As energy costs rise, farmers will increasingly rely on low- and no-till cultivation techniques. And as their incomes improve, they will have more capital available to employ other environmentally friendly techniques. An acre of corn, one of the rare plant species to use a carbon-dioxide-efficient photosynthesis system, removes more carbon dioxide from the atmosphere than does an acre of mature Amazonian rain forest, and next-generation biofuel technologies -- including those using nonfood cellulosic

feedstocks -- will increasingly contribute to the critically important goal of reducing, as the author Michael Pollan has put it, humans' "carbon footprint."

Next-generation feedstocks in other countries will also be important. Runge and Senauer sound the alarm about the potential use of cassava -- an important foodstuff -- for biodiesel, but cassava is far from being the most promising feedstock for biodiesel in developing countries. In fact, oil from jatropha, a nonfood plant that grows in wastelands, is widely used in India, where it is the main ingredient in the 15-20 percent biodiesel fuel that powers the trains running from New Delhi to Mumbai. According to the Energy and Resources Institute in New Delhi, a hectare of jatropha can produce four times as much fuel as a hectare of soybeans. Other countries, such as the Dominican Republic, Haiti, and several African states, have begun to sow jatropha for future use in biodiesel.

Like at no other time in history, the planet faces energy and climate crises. Resolving them will require a comprehensive and well-reasoned set of policies. Those choices must be based on sound analysis -- not hyperbole and the hollow recitation of discredited doomsday prophecies. TOM DASCHLE, Special Policy Adviser at the law firm Alston & Bird and Distinguished Senior Fellow at the Center for American Progress, is a former Democratic Senator from South Dakota and former Senate Majority Leader.

RUNGE AND SENAUER REPLY

Senator Tom Daschle's comments reflect his longtime commitment to promoting corn-based ethanol as a member of Congress and now as a lobbyist for the ethanol industry. Whatever our differences with him over biofuels, they are not about politics; we supported his last race for senator from South Dakota. Nor are our differences due to a lack of familiarity with agriculture. We have spent careers in Minnesota analyzing agricultural trade and its impact on the environment and on markets for food. Finally, we agree with Daschle that corn-based ethanol will be at best a partial solution to our current energy needs.

But we disagree with Daschle on four of his points: that U.S. corn is fed mostly to animals with few implications for people, that the conversion of corn into biofuel is an efficient way to reduce the United States' dependence on foreign oil, that higher grain prices will help farmers in food-deficit nations, and that the current corn-based ethanol industry will be a platform for the next generation of biofuels, which will be made from cellulose and waste materials.

First, we, too, know that meat-producing animals eat more than half of the U.S. corn crop. But people do eat chicken, eggs, pork, steak; drink milk; and consume foods containing cornmeal, corn oil, and corn sweeteners. U.S. consumers spend over 20 percent of their food budgets on meat, eggs, and dairy. And the share of the corn crop used to produce ethanol will rise from less than ten percent in 2004 to an expected 20-25 percent of the crop next year. As more acres are devoted to corn, fewer acres are available for other types of dairy feed, such as alfalfa, or for table vegetables, such as green beans. As a result, milk and vegetable prices are rising. And as acres are bid away from soybeans and turned over to corn, the price of soybean-based feed is also increasing, adding to the pressure on meat prices. In March 2007, the U.S. Department of Agriculture forecast that demand for ethanol would push the prices of poultry, pork, and beef higher. The Wells Fargo economist Michael Swanson noted in June 2007 that the rising costs of corn and soybean feed also "have a direct and significant impact" on "oils, cereals and bakery

products." Corn-based ethanol, Swanson concluded, "is indeed responsible for the increased rate of food inflation" (even though it is not its sole cause).

Second, even if every single one of the roughly 90 million acres in the United States devoted to growing corn goes into ethanol -- leaving none for feed, exports, or other uses -- corn-based ethanol would meet only 12-15 percent of the country's transportation fuel needs. Hence, ethanol's contribution to reducing U.S. dependence on foreign petroleum today is marginal at best.

Third, higher grain prices are translating into an increase in the prices of staple foods around the world. For some, this effect could be another way beside trade liberalization to raise the incomes of poor farmers. But the ethanol boom's distorting effects on commodity prices are hardly a substitute for expanded market opportunities for farmers in food-deficit nations. By definition, a food-deficit nation buys more food than it sells and hence is negatively affected by price increases. Most of the three billion people living on less than \$2 a day are subsistence farmers with little or no surplus to sell or urban slum dwellers who consume but do not produce food. As consumers, they lose. Higher prices may induce more grain production abroad, but unless wealthy nations agree to import this grain by granting expanded market access to poor producer nations, it will be of no help to them. Finally, as the need for corn for ethanol production cuts more and more into U.S. corn exports, the United States is increasingly trading an export in which it has a tremendous comparative advantage (corn) for a product in which it has a comparative disadvantage (ethanol), especially vis-à-vis Brazil. This disadvantage is precisely the reason the United States has a 54-cent-a-gallon ethanol import tariff.

Fourth, Daschle's argument that corn-based ethanol will be a platform for cellulose- and waste-based fuels is undercut by three observations. For one thing, although cellulose from switchgrass holds promise, who will plant it while the price of corn is above \$3.50 or more a bushel, as it is now? U.S. corn growers and the ethanol industry did not spend 30 years paying the campaign bills of members of Congress such as Senators Daschle and Bob Dole (both of whom now lobby for ethanol at the same firm) in order to give away the store to grass producers. If, moreover, the rapid technological development of cellulosic alternatives is to be promoted without "me too" subsidies matching those given to the corn-based ethanol industry, then the incentives currently favoring corn-based ethanol (such as tax credits, import tariffs, and production mandates) should be lowered. Giving huge grants to noncompetitive biomass production, rather than investing in basic research and development for conservation and renewable sources of energy, only pays down the cost of the inefficiency of that biomass.

On August 9, 2006, Senator Daschle noted in a speech before the American Coalition for Ethanol that advocates of corn-based ethanol "have always been acting more in the national interest than in self-interest." In truth, the ethanol industry is a textbook example of how agriculture and industry combine to influence Congress into transferring taxpayer and consumer dollars to wealthy and influential special interests.