

ARE ETHANOL SUBSIDIES AND MANDATES A FOOL'S ERRAND?

Article by Robert T. McElroy



In the Spring of 2008 I led a surgical team to do what I expected to be urgently needed surgery in a small hospital on the north coast of Haiti about 20 miles from Cap Haitien, the second largest city in Haiti. I have made 30+ trips to Haiti over the past decades to perform surgery in the Bon Samaritain Hospital in Limbe. During that time I have come to admire the stoical resignation of the Haitian peasant as he or she endures crushing poverty and the frequent diseases that are preventable in any modern advanced society. Still when one walks off the plane at Cap Haitien, the immediate impression is one of heat, noise, confusion and small boys aggressively demanding: "You! You, give me one dollar!" The drive into town reveals a town in a beautiful setting with ram-shackle housing climbing the steep hills, streets crowded with vendors, small children, and students all dressed in similar uniforms. The streets are full of trash, the roads unpaved, and one quickly senses a society that does not work well at the civic level. Walking the streets there are times the impression is of hostility, suspicion, glaring stares, and a sense of impending violence.

When we arrived at the hospital ready to work, the local doctor told us there had been street riots in Port Au Prince, the Haitian capital, over the rapid increase in the price of food, especially beans, rice and corn. Haitians will not come out, or ride public transportation when there is the threat of trouble. For us, that meant the clinics were virtually empty, and my talented team had little to do after finishing a series of minor cases. We would be done by noon; I cannot tell you how disappointed I was.

The rioting in Port Au Prince was based on the near doubling of the price of corn and rice, which had a profound effect on the amount of food available in a community where 50 to 70 percent of the residents' income is spent on food. The world price for these commodities had doubled and so had the price of food in the local market in Haiti. In the United States, where about one-tenth of income is spent on food, rising food prices does not have such a dramatic impact. But in Haiti, Jakarta and many other countries it may mean going from two to one meal a day. Those who are barely hanging on to the lower rung of the global economic ladder risk losing their grip entirely. The

experience is then of hunger, global unrest and as I write in mid-October 2012 renewed rioting in Port Au Prince over food prices.

Lester R. Brown, in *Foreign Policy Journal*, May-June 2011 wrote an article entitled "The False Promise of Biofuel," which I will quote at length on the relation between the use of food for fuel and the worldwide effect on food supplies. "The U.N. Food Price Index has steadily eclipsed its previous all-time global high." This trend has continued and as of July 2012 it had climbed for twenty-four consecutive months. "This year's harvest has fallen short as predicted and governments in Africa and the Middle East are increasingly unstable. With the price of food sustaining one shock after another, food is quickly becoming a hidden driver of world politics." Although food prices were not the spark that started the uprising in Tunisia, it was a factor that contributed to the protests. Egypt is reported to have only a few months of food reserve in a country that is facing potential economic freefall. We are entering a new paradigm of chronic, global-food scarcity with its associated instability and unrest.

"We abuse land because we regard it as a commodity belonging to us. When we see land as a community to which we belong, we may begin to use it with love and respect."

– Aldo Leopold, American ecologist, 1887-1948



In the same article Lester Brown continues, “Until recently, sudden price surges just didn’t matter as much, as they were quickly followed by a return to the relatively low food prices that helped shape the political stability of the late 20th century across much of the globe. But now both the causes and consequences are ominously different. Historically, price spikes tended to be almost exclusively driven by unusual weather – a

monsoon in India, a drought in the former Soviet Union, a heat wave in the U.S. Midwest. Such events were always disruptive, but thankfully infrequent. Unfortunately, the elevated demand is driven by trends that make it more difficult to increase food production: a rapidly expanding population, increasing drought associated with rising

temperatures (aka climate change), and irrigation wells running dry.”

Alarming, the world and especially the United States are losing their ability to affect changes in the world food supply. Until about 1995, the United States had either grain surpluses or idle cropland that could be used for reduction of potential famine. When the Indian monsoon caused a total crop failure in 1965, for example, President Johnson’s administration shipped one-fifth of the U.S. wheat crop to India, successfully staving off famine. This safety net is now gone.

There has been a strong desire by the environmental movement to lower the level of carbon dioxide and dependence on foreign oil by substantially increasing the use of biofuels. They were successful in getting Congress to pass laws that required the EPA to issue standards for blending ethanol with gasoline. This legislation resulted, as Lester Brown pointed out, “By 2010 nearly 400 million tons of grain were harvested, of which 126 million tons was sent to the distillery for conversion to ethanol. This massive capacity to convert food to fuel means

that the price of grain is now tied to the price of oil. If the price of oil goes up, so does the price of grain, which makes it more profitable to blend ethanol with petroleum products. Outside of the United States, Brazil is using sugar cane to produce ethanol, while the European Union seeks to have 10 percent of its transport fuels come from renewal sources and China had declared its intention to produce 15 percent of transport fuels from renewable sources.”

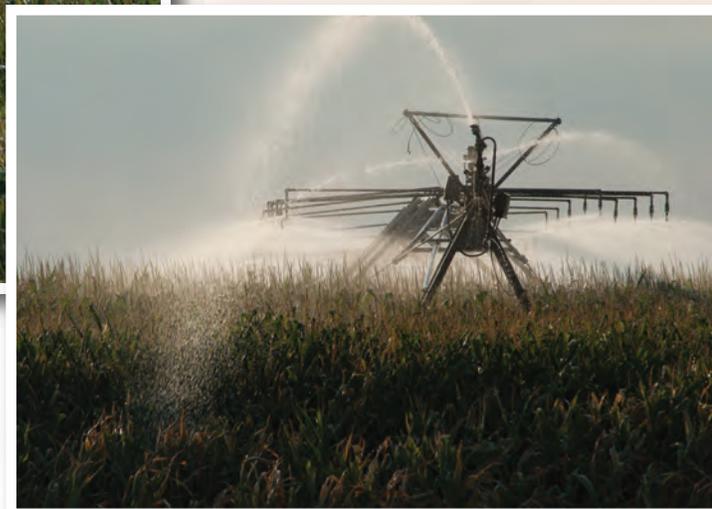
Henry Miller and Colin Carter in the article “Running on Empty (*Hoover Digest*, 2008 No.1; *The Environment*)” observed that, “President Bush announced in January 2007 a goal of replacing 15 percent of domestic gasoline use with biofuels (ethanol and biodiesel) over the next 10 years, which would require almost a fivefold increase in mandatory biofuels use to about 35 billion gallons. Six months later Congress pushed the target to 36 billion gallons, of which 15 billion gallons were to come from corn and 21 billion from other sources that are more advanced but largely unproven.”

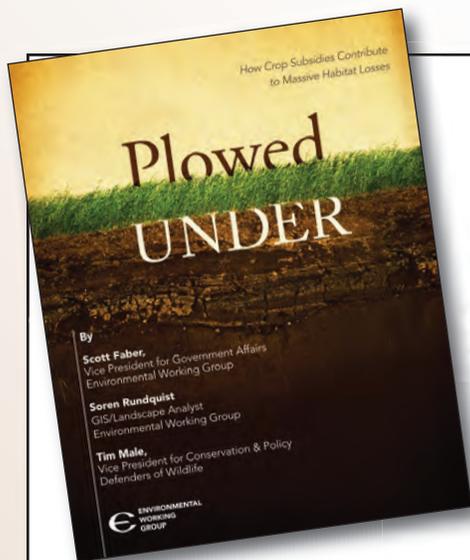
Miller and Carter continue, “The demands on the American farmer would be staggering, considering the amount of farmland and energy needed to produce such huge amounts of corn for ethanol and the rather meager amount of energy yielded by ethanol, because it is 30 percent less efficient than gasoline or diesel. An analysis by the Paris-based Organization for Economic Cooperation and Development suggests that replacing even 10



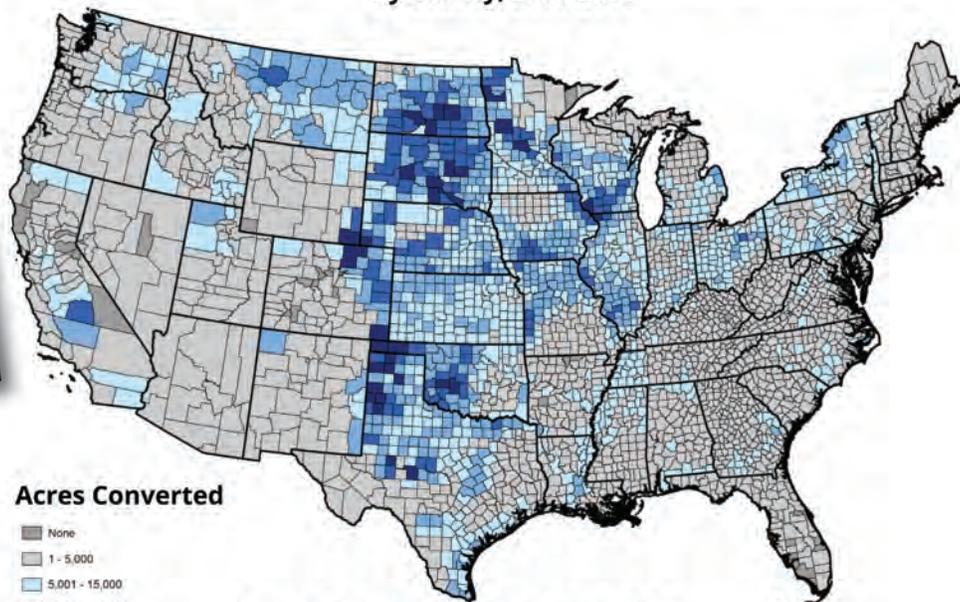
Irrigation for corn production is the largest use of both groundwater and surface water in many parts of the Great Plains. Current usage rates are not sustainable in most areas.

Above, opposite page: Plowing of native prairie, as witnessed here in Kansas, has become drastically increased in recent years.





Acres of Grassland/Wetlands/Shrub Land Converted to All Crops By county, 2008-2011



Acres Converted



Total Acres: 23,681,611

Calculated using the USDA-NASS Cropland Data Layer for crop years 2008 (56m), 2009 (56m), 2010 (30m), & 2011 (30m).

Crop Subsidies Contribute to Massive Habitat Losses

Subsidies and the resulting high commodity prices have contributed to the loss of more than 23 million acres of grassland, shrub land and wetlands between 2008 and 2011, wiping out vital habitat that sustains many species of wildlife, according to a report on recent research by Environmental Working Group and Defenders of Wildlife.

Of the 23.7 million acres, more than 8.4 million were converted to plant corn, more than 5.6 million to raise soybeans and nearly 5.2 million to grow winter wheat.

Wildlife habitat was destroyed across the country, but the greatest losses took place in states of the Great Plains and Upper Midwest. The study showed that some of the highest rates of converting habitat to cultivation were in drought-plagued portions of West Texas and Oklahoma. In each of 10 west Texas counties, growers plowed up more

than 50,000 acres of habitat to plant cotton, corn and wheat, for a total loss of more than 655,000 acres of wildlife habitat.

According to the U.S. Department of Agriculture, widespread destruction of grassland is putting at risk numerous imperiled species including Sage Grouse, Lesser Prairie-chicken, Swift Fox and Mountain Plover.

Many wetlands and grasslands are also critical habitat for migratory birds and a diversity of wildlife. In the Dakotas, more than 3.2 million acres of habitat were destroyed between 2008 and 2011. Experts also estimate that 1.4 million small wetlands in the eastern Dakotas, which are especially important for breeding ducks, are at high risk of being drained.

percent of America's motor fuel with biofuels would require that about a third of all the nation's cropland be devoted to oilseed, cereals, and sugar-crops. Achieving the 15 percent goal would require the entire current U.S. corn crop, a whopping 40 percent of the world's corn supply."

Miller and Carter also point out that, "Another unintended consequence with ethanol production is the pressure on water supplies. According to a report from an environmental advocacy group, three to six gallons of water are needed to produce each gallon of ethanol. Just to process the corn and produce the fuel, the group estimates, 2.6 billion gallons a year could be required from a single large aquifer that extends from Texas, to South Dakota, and an additional 120 billion

gallons a year would be needed for irrigation to grow more corn."

Travel around the Sandhills of Nebraska and other parts of the northern Great Plains reveals hundreds of thousands of acres of pristine prairie that has been recently plowed and replaced with corn, irrigated with water pumped from wells. Some ranchers have indicated that there is now a shortage of adequate grazing and haying land. The drought of 2012 has, of course, aggravated this condition.

Miller and Carter reported, "The effect on food and corn prices has been dramatic. Corn has gone from \$2/bushel to the \$7 to \$8/bushel range. An Iowa State University study estimates that food prices have already increased by \$47

annually per capita, or \$14 billion overall. Prior to the ethanol boom, more than 60 percent of the U.S. corn harvest was fed domestically to cattle, hogs, chickens, or used in food or beverages. Thousands of food items contain corn or corn byproducts. Cattle production has also felt the effect of feed prices over the last several years, with one large producer reporting an increased cost of 36 percent and adding \$101 to each animal finished at the feedlot."

Corn growers and ethanol producers have greatly benefited from the windfall of artificially enhanced demand. But it is already proving to be an expensive and dangerous experiment for the rest of us. Any shock to corn yields, such as drought, unseasonably hot weather, pests, or plant disease could send food prices

AMERICA, SWEET LAND OF SUBSIDIES

There is now a federal subsidy program for every year that has passed since Emperor Augustus held sway in Rome. On January 22, 2010 the federal government reportedly added its 2,000th subsidy program. The number of federal subsidy programs soared 21 percent during the 1990s and 40 percent during the 2000s.

into the stratosphere. Such concerns are not without their basis in reality. In 1970, a widespread outbreak of a fungus called southern-corn-leaf-blight destroyed 15 percent of the U.S. corn crop, and in 1988 drought reduced U.S. corn yields by almost 30 percent. Because of the drought in the Midwest this summer the ending stocks for 2012/13 were projected in the November World Agricultural Supply and Demand Estimates report at 647 million bushels, the lowest since 1995/96, when ending stocks were 426 bushels.

David Biello, in the August 2011 issue of *Scientific American* states that, "The hope of obtaining more advanced biofuels that could be produced at commercial volumes has failed to appear. Great attempts with large financial input to extract or brew ethanol from corn stalks, switch grass, or even trees, using sugar derived from the stalks and husks and not the edible kernel have not proven commercially viable. Nor has liquid fuels harvested from algae, which more efficiently turn water, CO₂ and sunlight into fats that can be converted into hydrocarbons, or more effective still, from genetically engineered microorganisms that could directly excrete hydrocarbons. The Navy recently bought 21,000 gallon of algae-derived jet fuel at \$424/gallon compared to diesel at \$5 per gallon. Current experience suggests that the scientific or industrial improvements needed to solve the challenges of making advanced biofuels practical may be extremely difficult to attain."

The goal of producing 36 billion gallons of biofuels annually by 2022, set by the U.S. government as a significant solution to energy independence and climate change, looks to be an even more distant prospect. And the California low-carbon fuel standards, which will start in 2015, expect the new generation of biofuels like cellulosic ethanol to be

plentiful. It is also clear why the EPA has steadily reduced its mandate for the production of 100 million gallons of cellulose-based ethanol to six million gallons

David Biello further stated, "in the year 2010 subsidies of \$5.6 billion were needed to produce ethanol mandated for fuel consumption. Ethanol is not very energy efficient and its production is not carbon neutral. Fermentation, the core technology for making ethanol, requires heat from burning fossil fuels such as natural gas or coal to distill the ethanol, plus more energy is required to plant, fertilize, harvest and transport the corn to the distillery. After all that trouble, a gallon of ethanol supplies a vehicle with only two-thirds of the energy in a gallon of petroleum-based gasoline. Those energy inputs cost money, too, and corn ethanol may never compete on price with gasoline without subsidies. Greater production is also limited by fertile land."

It has been calculated that replacing all U.S. transportation fuels with corn ethanol would require farmland three times the size of the continental U.S. In October 2010 the Congressional Research Service reported that if the entire record U.S. corn crop of 2009 was used to make ethanol, it would replace only 18 percent of the country's gasoline consumption. "Expanding corn-based ethanol ... to significantly promote U.S. energy security is likely to be infeasible," the researcher concluded

Although breakthroughs are always possible in the scientific quest for affordable biofuels, at present, corn and sugarcane must provide the main – if not the only source – of alternative biologic energy, straining a global agriculture system already struggling to provide food, feed, and fiber for seven billion people – plus livestock – and counting.

It is difficult not to conclude that the effort to produce

economical and high-energy biofuels in face of the world's need for food is immoral, because of chronic human hunger and potential starvation of millions in the developing nations. From an ecological damage standpoint, it is proving to be a fool's errand.



Foxes of the vanishing shortgrass prairie, two Swift Fox kits.

Robert Thomas McElroy is a retired general surgeon. He worked in Topeka for many years and was founding president of Tallgrass Surgery, PA. of Topeka. Dr. McElroy has a strong interest in helping the poor in the third world. Early in his career he lived and worked at a remote hospital in Western Ethiopia with his wife Jean for nearly two years. He has made more than thirty medical service trips to Haiti, Nicaragua, Ecuador and Zaire. He is currently on the board of AMOS Hope and Health which sponsors rural health clinics in Nicaragua. He and Jean have two sons. Tom currently works in London. Will and his wife Jill live in California and are parents of two granddaughters, Hannah and Fiona. Bob enjoys trail and open country riding with his Tennessee Walkers, many aspects of nature, including upland gamebird hunting.

References:

Biello, David; "The False Promise of Biofuels," *Scientific American Magazine*, August 10, 2011, pp. 59-65.
Brown, Lester R.; "The New Geopolitics of Food," *Foreign Policy Magazine*, May-June 2011,
Miller, Henry I. and Colin A Carter; "Running on Empty," *Hoover Digest*, 2008 No. 1; The Environment