

1436 U Street NW, Suite 100 Washington, DC 20009 USA

t: 202.667.6982 f: 202.232.2592 w:www.ewg.org

The Unintended Environmental Impacts of the Current Renewable Fuel Standard (RFS): A Guide to Common Sense RFS Policy Fall 2007

Biofuels can provide a significant source of renewable energy to reduce dependency on foreign oil and reduce climate change pollution. As Congress considers increasing the current RFS, we have an opportunity to promote biofuels while reducing unintended negative effects on the environment, natural resources and public health. Unfortunately, the ethanol industry is ramping up production dramatically before even rudimentary questions about the environmental impacts have been answered. Reliance on corn grain as a feedstock - which accounts for 98% of current ethanol production¹ - is already having adverse effects on food and feed prices, and is already posing local and regional environmental problems, including:



Ethanol plant in South Dakota.

Source: istock.com

• **Increased soil erosion** – The current method of corn production generates significant amounts of excess soil erosion. Soil loss robs land of productivity (requiring more fertilizer inputs) and, when soil runs off farm fields, it has serious impacts on aquatic life and shortens the useful life of hydroelectric dams and drinking water reservoirs. According to the latest USDA National Resources Inventory (2003), the average rate of erosion for cropland was 4.9 tons per acre.² With 2006 national average corn yields at 149 bushels per acre³ and average ethanol production at 2.7 gallons of ethanol per bushel of corn,⁴ it is estimated that soil losses from corn-ethanol production will be about 24 pounds (lbs) of soil per gallon of ethanol produced. The Renewable Fuels Association predicts there will be 5.6 billion gallons of ethanol capacity in 2007.⁵ Should the 13.9 million acres of corn needed to provide the feedstock for those facilities come from existing corn land, 136 billion lbs of soil erosion could be associated with current ethanol production.

• Increased nutrient pollution - Corn is the top fertilizer-utilizing crop in the country.⁶ The National Agricultural Statistics Service (NASS) reports 15 million additional acres of corn were planted in 2007 up from the 78 million acres planted in 2006.7 This will result in a substantial increase in water pollution from nitrogen fertilizer exacerbating algae outbreaks and fishkills in waters nationwide. In particular, because most of the corn in the country is grown in the Midwestern "Corn Belt," a larger RFS will increase the largest "dead zone" in the country at the mouth of the Mississippi River Basin in the Gulf of Mexico. Cities like Des Moines, Iowa also already spending large sums to remove excessive nitrate from their tap water. University of Maryland Professor, Tom Simpson estimates that an additional net loss of nearly 250 million lbs of nitrogen could result if half the 15 million acre expansion of corn went into soybean acres and the remaining half was equally converted from Conservation Reserve Program (CRP) or idle land and from pasture or hay land.⁸



WWW.EWG.ORG

• Increased herbicide and insecticide pollution - More corn has also resulted in the use of more toxic chemicals in general, and weed killers, in particular. Again, water utilities will bear the cost of cleaning up this water. NASS estimated the 2005 corn crop consumed 157 million lbs of herbicides and 4.8 million lbs of insecticides.⁹ Though we do not have chemical loss factors, if corn from

existing corn land is used as feedstock for the 2007 ethanol capacity, then 26 million lbs of herbicides and 821,000 lbs of insecticides use could be attributed to ethanol. This represents roughly 15% of the estimated 171 million pounds of herbicides and 5.3 million lbs of insecticides applied to the 2007 corn crop. That will include millions more pounds of Atrazine, a hormone-disrupting potential carcinogen, which water utilities across the Midwest now routinely pay to remove from drinking water.

• Increased aquifer depletion - According to the 2003 Farm and Ranch Irrigation Survey, corn continues to be the dominant irrigated crop, accounting for nearly 19 percent of irrigated land.¹⁰ The survey found that in 2003, 9.75 million acres of corn were irrigated, representing nearly 12% of the acres planted that year. Irrigated corn acres require about 1.2 acre-feet of water, or more than 391,000 gallons per acre. Thus, irrigated corn acres in 2003 required a total of 3.8 trillion gallons of water. If 12% of the corn acres needed to supply the 2007 ethanol facilities were irrigated, over 650 billion gallons of water would be required to grow this feedstock. Increasing the RFS mandate would dramatically increase irrigation demand for cornstarch-ethanol production, which would increase rates of aquifer depletion and strain other sources of water.



A family of greese on the Fox River, Illinois. Source: Ducks Unlimited. Credit: Ron Dickenson Batavia, IL.

• Loss and degradation of wildlife habitat - We are also concerned that farmers in some areas will be expanding corn acreage at the expense of wildlife habitat. Corn requires large amounts of fertilizers and pesticides, which, when coupled with its weak root system, make it highly susceptible to erosion. The subsequent results are environmentally damaging on several fronts. Sedimentation blocks sunlight needed by plants, clogs fish gills, and buries spawning grounds and food supplies for aquatic creatures.¹¹ Pollutants, such as phosphorous and nitrogen, used in fertilizer can cause eutrophication, or reduced oxygen levels which kill or weaken many fish and crustacean species.¹² Furthermore, land in crop production is much less likely to provide adequate nesting grounds for a variety of birds. A recent study by Farrand and Ryan¹³ found nesting on CRP lands to be ten times higher than on land in crop production.

GUIDE TO COMMON SENSE RFS POLICY:

Given these unintended environmental impacts of corn production, a common sense Renewable Fuel Standard would aim to avoid these pollution problems by incorporating:

- a) Minimum environmental safeguards for energy feedstock crops
- b) Greenhouse gas (GHG) reduction standards
- c) Certification and labeling program

By setting **minimum agricultural standards for energy feedstock crops**, farmers would use practices that lower the losses of soils, nutrients, and chemicals and minimize water use and habitat destruction. Establishing a **greenhouse gas reduction standard** for all ethanol feedstocks to achieve signals to farmers and ethanol refineries a reward for transitioning to multi-species, perennial grass feedstocks that have higher GHG reduction benefits and lower environmental impacts than corn. Finally, a **certification and label-ing program** will enable tracking of these environmental practices and allow the public to identify and patronize gas stations whose ethanol sources achieve these best practices. Only by anticipating the unintended consequences and by guiding this government-established market, can the public truly achieve its goals to reduce oil dependency and emit fewer climate-changing gases without increasing local and regional environmental harm.

For more information, please contact: Sandra Schubert, Director of Government Affairs, 202-939-9150, sschubert@ewg.org or Michelle Perez, Senior Analyst, 202-939-9151, michelle@ewg.org.

1 Yacobucci, Brent D., and Randy Schnepf. Congressional Research Service Report to Congress. Ethanol and Biofuels. May 16, 2007.

2 Sand, Duane. A soil conservationist's view of ethanol. Iowa Natural Heritage Foundation. 2006. http://www.inhf.org/2006fallmag/articles/2006fallmag-environmentalpolicy.htm.

3 U.S. Department of Agriculture. National Agricultural Statistics Service (NASS). http://www.nass.usda.gov/QuickStats/.

4 Iowa Department of Agriculture. Ethanol Facts. http://www.agriculture.state.ia.us/ethanolfacts.html.

5 Renewable Fuels Association. Industry Statistics. http://www.ethanolrfa.org/industry/statistics

6 The Fertilizer Institute. TFI Advocate. May 2006. Volume 5. Issue 5. http://www.tfi.org/publications/advocate/May/mayadvocate.pdf

7 U.S. Department of Agriculture. NASS. "News Release." June 29, 2007. http://www.nass.usda.gov/newsroom/2007/06_29_2007.asp

8 Simpson, Tom. University of Maryland. http://www.mawaterquality.org/conferences/biofuels.htm#presentations

9 U.S. Department of Agriculture. NASS. Agriculture Chemical Use Database. http://www.pestmanagement.info/nass/app_usage.cfm.

10 U.S. Department of Agriculture. Farm and Ranch Irrigation Survey 2003. http://www.nass.usda.gov/census/census02/fris/fris03.pdf.

11 U.S. Environmental Protection Agency. Managing Nonpoint Pollution From Agriculture. http://www.epa.gov/owow/nps/facts/point6.htm.

12 U.S. Geological Survey. http://ga.water.usgs.gov/edu/urbanpho.html.

13 Farrand D. T., Ryan M. R.2005. Impact of the Conservation Reserve Program on wildlife conservation in the Midwest. BioOne Online Journal. p 41-62.