

## Alternative Energy: Field Dreams

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Before Canada ratified the Kyoto Protocol, farmers in eastern Ontario dreamed of a locally owned and operated \$56-million ethanol plant that could convert corn starch into ethanol, a low-emissions fuel that can be used to power vehicles. On the cusp of construction after 13 years in development, the 2,800-farmer-strong Seaway Valley Farmers Energy Co-operative now faces another possible setback--their plant's product might not be so energy-efficient after all.

The controversy started when a joint study released in June by Cornell University and the University of California-Berkeley concluded that the process of converting field corn into liquid ethanol, as Seaway's plant will do, consumes 29% more fossil fuels than the value of the energy in the product. The paper, by Cornell's David Pimental, an ecology and agriculture professor, and Berkeley's Tad Patzek, a civil and environmental engineering professor, traces power consumption back to the farming of the corn in the farmers' fields, and the two make no bones about their opinion. "In terms of renewable fuels," says Patzek, "ethanol is the worst solution."

Pimental and Patzek have tried to get attention with previous versions of this report and largely failed. Their critics dismiss their data as out of touch with modern agriculture. But given the amounts Canadian governments are throwing at ethanol--\$140 million next year from just one federal department--it's time for a more critical stance.

In the United States, home of generous agricultural subsidies, a single ethanol plant can receive up to US\$7.5 million in annual direct federal grants. This summer's energy bill includes tax breaks expected to nearly double the country's production of ethanol by 2012. More than 40 new plants opened in the U.S. between 2000 and 2004, while Canada had none.

To boost production here, the Canadian government offered \$118 million in no-interest loans(government officials prefer to call them repayable contributions)over the past two years to help industry finance 11 plants--some still in planning, some now under construction--through its ethanol expansion program; the government will start collecting these loans when profits pass 20¢ a litre. In addition, the feds won't apply excise tax to the ethanol portion of blended gasoline at the pump.

Provincially, most governments offer some level of tax relief. In June, Ontario announced a 12-year, \$520-million ethanol growth fund to provide capital and operating grants for new ethanol plants. These plants are intended to produce sufficient ethanol to meet the demand created by Premier Dalton McGuinty's law, which requires an average of 5% ethanol in gasoline sold in Ontario, starting in 2007. Legislatures in Manitoba and Saskatchewan have also passed mandates requiring 7.5% to 10% ethanol in most of their fuels, but this legislation won't be enforced until local production can meet demand.

In every political announcement are phrases like "reduced greenhouse gases," "fewer emissions" and "cleaner air"--benefits for farmers rarely top any speech. "Our position, and that of our department, is that ethanol has a net positive energy balance," says Claude Robert, senior analyst at Natural Resources Canada. In March of 2005, Robert's department had an independent consulting firm,(S&T)2 Consultants, update a study it had done the year previously for the government. Using Canadian figures and growing conditions, the Delta, B.C.-based company calculated that ethanol made from corn generated twice the energy required to produce it.

For the locals in the Seaway Valley co-op, each of whom has invested upwards of \$2,500 in the Cornwall, Ont., plant, the publication of Pimental and Patzek's report came just before starting construction on the facility, currently set for late fall. Unsurprisingly, co-op members dismiss Pimental and Patzek's findings.

Seaway's president, Richard Lavigne, is skeptical of the data the professors used. The grain farmer points out that the report gives no credit for irrigation or corn yields, and the use of fertilizer is "way off." Seaway farmers have dropped "a lot of money" waiting, he says, but the group remains optimistic. Seaway spokesman Ed Schouten claims there are buyers for the 66 million litres per year they will produce, and anticipates the plant's backers will see a good return on their investment.

While ethanol may soon make up 5% of the gas at Ontario's pumps, it certainly isn't matching that in capital investment dollars. Total investment in Canadian ethanol production to date is about \$1.2 billion--chump change compared to the \$6.2 billion invested in 2004 in Alberta's oilsands, with \$2.3 billion more in oilsands development capital projected this year. Recent oilsands projects from the likes of Shell, Chevron or Suncor have already eclipsed cost targets by amounts greater than the capital expenditure costs of all Canada's current ethanol projects. Ethanol producers say production costs are dropping, but at 35¢ to 45¢ per litre, they are still steep compared to Alberta oil, which can cost less than 24¢ per litre to extract and refine. Governments can try to create an ethanol market, but international investors see green only in oil.

After reading the American study, more will be tempted to see ethanol funding as another farm subsidy in disguise. Even with oil on a tear, ethanol producers may encounter more weeds before harvest time.