

BIOFUELS GET A BIG PUSH FROM BUSH



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While there is a great deal of partisan division in the United States, there is one thing that all of us, Republicans and Democrats, rich and poor, can agree on, and that is "cellulosic ethanol." Cellulowhat? The phrase doesn't exactly slide off your tongue, but President Bush made it a big part of his State of the Union address, in which he advocated the development of biofuels from sources such as wood chips, stalks, or switchgrass to help address the United States' "addiction to oil" (his words).

When I wrote my February Viewpoint column on biofuels (prior to the speech), I had no idea that President Bush was going to call for biofuel research. Honest! I of course would have been honored had the White House staff called with a tip that it would be a good time to write about biofuels, but somehow that call never came. I guess it was just good timing. Right after the speech, I began seeing lots of print and TV ads by General Motors for E85, a new fuel that is 85% ethanol (from corn) and 15% gasoline. GM was touting its new flex fuel cars and trucks that can use E85. Hmmn, what a coincidence. Maybe GM got the tip from Bush that was meant for me!

This publicity could be the start of something big, though a lot of people were scratching their heads the day after the speech, saying "what is cellulosic ethanol?" and "what the heck is switchgrass?" I'm just glad that Bush mentioned wood chips, because that could be very good news for the North American pulp and paper industry.

Of course, many ideas made in State of the Union speeches don't last long in the light of day. A page one article in *The Wall Street Journal* on Feb. 2 noted that "the plan is the latest in a long line of promises from Washington to support new forms of alternative energy, going back to President Carter's promotion of synthetic fuels." However, it also noted that the idea "offers some intriguing new technology and the possibility of widespread support from environmentalists, farmers, and auto makers." They didn't mention forestry companies and pulp makers, but we can add ourselves to that list.

The US \$150 million that Bush pledged for research is woefully inadequate, but if ExxonMobil can produce profits of US\$ 10.7 billion in one quarter alone and US\$ 36 billion for all of 2005, there has to

be some way to find research money for a promising new fuel. The massive research initiative needed to make this work requires a coalition of players with big economic and political clout. Having farmers and automakers on your side is not a bad start.

MONEY IS ALREADY FLOWING

Venture capitalists are already interested. A well-known Silicon Valley venture capitalist, Vinod Khosla (a co-founder of Sun Microsystems), has, through a fund called Khosla Ventures, invested in several "clean fuel" startups. One of them, BC International, is building an ethanol plant in Jennings, Louisiana. In addition to agricultural waste, the plant can use forestry and sawmill waste. Khosla is apparently interested in technologies that produce ethanol from sources other than the edible part of corn, since this would pose less of a threat to global food supplies.

More interesting news comes from a group of experts from the Georgia Institute of Technology, Imperial College London, and the Oak Ridge National Laboratory. They back the idea of a massive biofuels research and policy plan and have published a review article, called "The Path Forward for Biofuels and Biomaterials," in the Jan. 27 issue of *Science*. "We can readily address, with research, 30% of current transportation fuel needs. But reaching that goal will require 5-10 years and significant policy and technical effort," said Dr. Arthur Ragauskas, a professor in Georgia Tech's School of Chemistry and Biochemistry and a lead on the project.

The group recommends researching many materials, such as corn stalks and wheat stalks, fast-growing trees (poplar and willow) and the now famous switchgrass. Production of cost effective biofuels will require advanced processing and "accelerated domestication" of energy crops, the group says. This could take place in an integrated biorefinery that produces fuels, power, and chemicals from biomass. Extracting biofuel materials from wood chips prior to pulping could make pulp mills important players in this budding business.

If we can invent the atomic bomb and put a man on the moon, we certainly can make competitively priced fuel out of cellulose. All it will take is a ton of money, great ideas, and some well-heeled partners. Fill 'er up—with wood chips! **SI**