



Office of Agricultural Affairs
U.S. Embassy, Paris

Biofuels in the United States Newsletter – May 2009

To our readers: The Office of Agricultural Affairs of the U.S. Embassy in Paris would be happy to facilitate your visits to the United States. If you advise of us your travel plans we can help you organize your itinerary. Also, please do not hesitate to share any questions with us on the issues raised below.

For further information on all of the following topics, please click on the titles to access websites.

1. U.S. Policy and Project Funding:

President Obama Announces Steps to Support Sustainable Energy Options, USDA, DOE and EPA to Lead Efforts^{1 2}

On May 5, President Obama announced steps to further his Administration's commitment to advance biofuels research and commercialization. Specifically, he signed a Presidential Directive establishing a Biofuels Interagency Working Group, announced additional Recovery Act funds for renewable fuel projects, and also announced his Administration's notice of Proposed Rulemaking on the Renewable Fuel Standard.

The President established a Biofuels Interagency Working Group, to be co-chaired by the Secretaries of Agriculture and Energy and the Administrator of the Environmental Protection Agency. This Working Group will work with the National Science and Technology Council's Biomass Research and Development Board in undertaking its work. The Working Group will:

- Develop the nation's first comprehensive biofuel market development program;
- Coordinate infrastructure policies impacting the supply, secure transport, and distribution of biofuels; and
- Identify new policy options to promote the environmental sustainability of biofuels feedstock production, taking into consideration land use, habitat conservation, crop management practices, water efficiency and water quality, as well as life cycle assessments of greenhouse gas emissions.

In his directive, the President called on Secretary of Agriculture Tom Vilsack to immediately begin restructuring existing investments in renewable fuels as needed to preserve industry employment, and

¹

<http://www.usda.gov/wps/portal/!ut/p/.s.7.0.A/7.0.1RD?printable=true&contentidonly=true&contentid=2009/05/0145.xml>

² http://www.whitehouse.gov/the_press_office/President-Obama-Announces-Steps-to-Support-Sustainable-Energy-Options/

develop a comprehensive approach to accelerating the investment in and production of American biofuels and reducing U.S. dependence on fossil fuels.

The President also announced that \$786.5 million from the American Recovery and Reinvestment Act will be provided to accelerate advanced biofuels research and development and expand commercialization by providing additional funding for commercial biorefineries. These efforts will be overseen by the Department of Energy. The funding will be allocated across integrated pilot-scale, demonstration-scale, and commercial-scale biorefineries, fundamental research in key program areas, and ethanol research.

Finally, the President announced the EPA's notice of Proposed Rulemaking on the Renewable Fuel Standard. This proposal outlines the EPA's strategy for increasing the supply of renewable fuels, poised to reach 36 billion gallons by 2022, as mandated by the Energy Independence and Security Act of 2007. For the first time, some renewable fuels must achieve greenhouse gas emission reductions compared to the gasoline and diesel fuels they displace. U.S. refiners must meet the requirements to receive credit toward meeting the new standards. EPA also will conduct peer reviews on life cycle-analysis methodology and the results for various fuel and feed-source combinations.

USDA, DOE Announce Up to \$25 Million in Funding for Biomass Research and Development Initiative³

The U.S. Departments of Energy (DOE) and Agriculture (USDA) announced in January up to \$25 million in funding for research and development of technologies and processes to produce biofuels, bioenergy, and high-value biobased products, subject to annual appropriations.

USDA and DOE are issuing this joint funding opportunity announcement (FOA) for several types of projects aimed at increasing the availability of alternative renewable fuels and biobased products. The project's goal is to create a diverse group of economically and environmentally sustainable sources of renewable biomass. Advanced biofuels produced from these types of sources are expected to reduce greenhouse gas emissions by a minimum of 50 percent.

The FOA will fund projects in the following three technical areas specified in the Food, Conservation, and Energy Act (FCEA) of 2008:

- Feedstocks development,
- Biofuels and biobased products development and,
- Biofuels development analysis.

Award amounts are planned to range from \$1 million to up to \$5 million with project periods up to four years, subject to annual appropriations. Eligible applicants include institutions of higher education, national laboratories, federal research agencies, state research agencies, private sector entities, non-profit organizations, or a consortium of two or more of those entities. The FOA is available online at www.grants.gov.

USDA Approves First Guaranteed Loan for Commercial Scale Cellulosic Ethanol Plant⁴

In January, USDA approved the first loan guarantee to a commercial-scale cellulosic ethanol plant. The \$80 million loan to Range Fuels Inc., Soperton, Ga., comes from the Section 9003 Biorefinery Assistance Program authorized by the 2008 Farm Bill. This program promotes the development of new and emerging technologies for the production of advanced biofuels - defined as fuels that are not produced from food sources. The program provides loan guarantees to develop, construct and retrofit viable commercial-scale biorefineries producing advanced biofuels. The maximum loan guarantee is \$250 million per project. The program is designed to create energy-related jobs and economic development in rural America. The project is expected to produce an estimated 63 jobs. When fully operational in 2010, the plant is expected to produce approximately 20 million gallons of cellulosic ethanol per year.

Defense Advanced Research Projects Agency Sets Sights on New Biofuels⁵

In April, the US Defense Advanced Research Projects Agency (DARPA) announced the implementation of a program to explore new forms of biofuel to reduce the military's reliance on imported oil. The new nonpetroleum sources will be used to power military aircraft, ground vehicles and non-nuclear ships. DARPA scientists are exploring ways to convert 'yellow grease oil' or plant-based 'cellulosic and algae sources' into JP8 jet fuel. The private sector has produced viable alternative biofuels in the quest for cheaper, domestically produced fuel and several commercial airlines have conducted test flights using a blend of petroleum and biofuel.

2. Economic Reports/Perspectives

Cellulosic Biofuels: Analysis of Policy Issues (report by the Congressional Research Service)⁶

Cellulosic biofuels are currently produced on a very small scale -- significant hurdles must be overcome before commercial-scale production can occur. The renewable fuels standard (RFS), a major federal incentive, mandates 100 million gallons per year (mgy) of cellulosic biofuels use in 2010. After 2015, most of the increase in the RFS is intended to come from cellulosic biofuels, and by 2022, the mandate for cellulosic biofuels will be 16 billion gallons. Whether these targets can be met is uncertain. Research is ongoing, and the cellulosic biofuels industry may be on the verge of rapid expansion and technical breakthroughs. However, at this time, only two small refineries are scheduled to begin production in 2009, and an additional nine are expected to commence production by 2011 for total output of 300 mgy per year, compared with an RFS requirement of 500 mgy in 2012.

The federal government, recognizing the risk inherent in commercializing this new technology, has provided loan guarantees, grants, and tax credits in an effort to make the industry competitive by 2012. In particular, the Food, Conservation, and Energy Act of 2008 (the 2008 farm bill, P.L. 110-246) supports the

⁴

http://www.usda.gov/wps/portal/!ut/p/_s.7_0_A/7_0_1RD?printable=true&contentidonly=true&contentid=2009/01/0024.xml

⁵ <http://www.airforce-technology.com/news/news52706.html>

⁶ http://assets.opencrs.com/rpts/RL34738_20081107.pdf

nascent cellulosic industry through authorized research programs, grants, and loans exceeding \$1 billion. The farm bill also contains a production tax credit of \$1.01 per gallon for ethanol produced from cellulosic feedstocks. Private investment, in many cases by oil companies, is also playing a major role in cellulosic biofuels research and development.

Study Reveals Benefits of Corn Stover⁷

Research from the University of Minnesota shows that, as a fuel for heat and power applications, corn stover reduces the life-cycle fossil-fuel emissions of carbon dioxide by factors of approximately 15 and 25 compared to natural gas and coal, respectively. This means significant amounts of renewable electricity can be generated in a distributed fashion with lower overall emissions at ethanol plants and other facilities to produce heat and power. The research team evaluated a corn stover logistics system that analyzed the collection of round bales from the field during the fall harvest, as well as their delivery to storage sites within two miles of the field, and then evaluated the annual costs of processing at the storage sites. As a next step, the researchers will look at ways to improve the handling characteristics of herbaceous biomass and increase biomass electricity generation at ethanol plants in the Midwest. They also plan to expand the research to include roll compaction of native grasses, straw and alfalfa.

Cold Weather Testing Soy Biodiesel⁸

A team of scientists, researchers, soybean farmers and truckers were in Alaska in March for cold weather testing of soy biodiesel. The Indiana Soybean Alliance has joined forces with the University of Alaska Fairbanks School of Natural Resources and Agricultural Sciences to road test Permaflo Biodiesel at northern latitudes. The team flew from Indiana to Anchorage and drove vehicles powered with biodiesel to Fairbanks. Part of the crew continued the drive to the Arctic Circle where they will camp with a generator powered by biodiesel. Permaflo Biodiesel is a unique formulation of biodiesel processed to significantly reduce the traditional problems of biodiesel performance in cold-weather conditions. The process changes the chemical composition of biodiesel to lower the cloud point temperature—the point when crystallization starts and the oil begins to appear clouded. The biodiesel is capable of working at temperatures down to minus 67 degrees Fahrenheit without gelling.

Smart Choices for Biofuels (by Sierra Club / WorldWatch Institute)⁹

The Sierra Club and Worldwatch Institute released a report in February highlighting the need for important policy reforms at this critical juncture in America's effort to increase the use of biofuels. The report outlines the economic and environmental impacts of first-generation biofuels such as corn ethanol, proposes strategies to make the biofuels industry more sustainable, and offers specific policy recommendations in four broad categories: developing sustainability standards, advancing biofuels production and new technologies, creating green jobs through biofuels, and promoting policy coherence across energy sectors.

The steps proposed in the report include an accelerated transition to cellulosic feedstocks and the use of more effective agricultural practices to decrease erosion and soil nutrient depletion. The report also recommends complementary steps beyond improvements in biofuels production, such as the promotion of plug-in hybrid vehicles and increased investments in public transportation, which could also help

⁷ <http://www.thebioenergysite.com/news/3225/study-reveals-benefits-of-corn-stover>

⁸ <http://www.thebioenergysite.com/news/3228/cold-weather-testing-soy-biodiesel>

⁹ <http://www.worldwatch.org/smartchoicesforbiofuels>

achieve crucial energy and climate goals. Suggested changes in four broad policy categories include sustainability standards, advancing biofuels production and new technologies, creating green jobs, and promoting policy coherence across energy sectors.

The Impact of Ethanol on Food Prices and Greenhouse-Gas Emissions (Congressional Budget Office paper dated April 2009)¹⁰

In this paper, the Congressional Budget Office (CBO) estimates that from April 2007 to April 2008, the rise in the price of corn resulting from expanded production of ethanol contributed between 10 and 15 percent to the rise in food prices. Over the same period, certain factors – for example higher energy costs – had a greater effect on food prices than did the use of ethanol as a motor fuel.

Research conducted by the Argonne National Laboratory (ANL) and used by federal agencies suggest that in the short run, the production, distribution, and consumption of ethanol will create about 20 percent fewer greenhouse-gas emissions than the equivalent processes for gasoline. For 2008, such a finding translates into a reduction of about 14 million metric tons of carbon dioxide and equivalent gases. Research by ANL suggests that increased use of cellulosic ethanol in the amounts specified in the Energy Independence and Security Act of 2007 could reduce greenhouse-gas emissions from the nation's transportation sector by as much as 130 million metric tons of CO₂ equivalent by 2022, which would equal about 6 percent of emissions from that sector.

3. Technical Studies

Doubling a Gene in Corn Results in Giant Biomass¹¹

The University of Illinois has developed a corn plant with enormous potential for biomass. It yields corn that would make good silage due to a greater number of leaves and larger stalk, which could also make it a good energy crop. The gene known as Glossy 15 originally described for its role in giving corn seedlings waxy coating that acts like a sun screen for the young plant. Without Glossy 15, seedling leaves instead appear shiny and glossy in sunlight. Further studies have shown that the main function of Glossy15 is to slow down shoot maturation.

ARS Studies Glycerin Use in Swine and Poultry Feed¹²

Producing a gallon of biodiesel from soybean oil yields around two-thirds of a pound of crude glycerin. When this glycerin is refined to 99 percent purity, it can be used in many products, including pharmaceuticals, foods, drinks, cosmetics, and toiletries. Agricultural Research Service (ARS), Auburn University and Iowa State University examined the use of crude glycerin to supplement livestock feed. The diets of starter pigs and finisher pigs were supplemented with different levels of crude glycerin. Pigs fed the crude glycerin were able to digest it efficiently, and it provided them with a supply of caloric energy that basically equaled that of corn grain. A followup study showed no effects on weight, carcass

¹⁰ <http://www.cbo.gov/doc.cfm?index=10057>

¹¹ <http://www.thebioenergysite.com/news/3219/doubling-a-gene-in-corn-results-in-giant-biomass>

¹² <http://www.ars.usda.gov/is/AR/archive/apr09/biodiesel0409.htm>

composition, and meat quality in pigs fed diets containing 5 percent or 10 percent crude glycerin from weaning to market weight. Four levels of crude glycerin to laying hens and three broiler studies were conducted.

Overall, the data indicates that crude glycerin is an excellent source of energy in swine and poultry rations and can be used without harming animal performance, carcass composition, or meat quality. Crude glycerin does contain small amounts of methanol and salt, which could potentially limit its use as a feed supplement. Additional studies might be needed to assess how much methanol livestock can safely ingest in glycerin supplements, which would help regulators refine U.S. standards for using crude glycerin in livestock feed.

ARS Studies Ethanol Byproducts Use in Animal Feed¹³

ARS studied the effects of feeding fibrous coproducts to young pigs, and found that Dry Distillers Grains (DDGS) increased the immune response of piglets, possibly making them more resistant to illness. Studies have been conducted with swine at Iowa State University, now focusing on the energy and amino acid availability in 13 different coproducts of the corn-milling industry. Findings were that for adult pigs, farmers can use up to 40 percent DDGS mixed with corn and soy-meal feed. For piglets, they can use 7.5 percent, because the piglets tend to grow less with too much fiber. In Illinois and Pennsylvania, ARS works with various Universities investigating methods of using DDGS as an ingredient in cattle feed and human food and as fillers in biodegradable plastics.

Contact:

U.S. Embassy: <http://france.usembassy.gov>

Paris Office of Agricultural Affairs: <http://www.usda-france.fr>

USDA/FAS: <http://www.fas.usda.gov>

Contact: Marie-Cécile Hénard, Agricultural Economist

Marie-Cecile.Henard@usda.gov

Tel: 01 43 12 23 68

Fax: 01 43 12 26 62

¹³ <http://www.ars.usda.gov/is/AR/archive/feb09/ethanol0209.htm>