

# FarmBureau news

A row of white school buses with blue stripes parked in a lot. The buses are viewed from a low angle, showing their front ends and side mirrors. The background consists of bare trees under a clear blue sky.

February 2006

## **BIODIESEL** hitting the road in Virginia

**Rising fuel costs pump up interest in ag-based options**

# Rising fuel prices pump up interest in

## AG-BASED OPTIONS

When the cost of gasoline and diesel fuel keeps climbing, as it did during most of 2005, what's not to like about the concept of turning plant matter into fuel?

Last year's price hike at the pumps did in fact further fuel an interest in both ethanol—an alcohol fuel generally derived from grain and corn—and biodiesel—a fuel generally made from soybean or vegetable oils.

### Ethanol

The National Corn Growers Association notes that drivers who fill up with the E-10 (10 percent ethanol) blend of ethanol saved as much as 15 cents per gallon per week. Flexible fuel vehicles, which use E-85 fuel (85 percent ethanol), are saving even more.

### Biodiesel

According to the Virginia Department of Environmental Quality, biodiesel in its pure form is less toxic than table salt and biodegrades in the environment at about the same rate as ordinary sugar.

The DEQ estimates there are about 15 suppliers and nine public pumps in Virginia selling either B-2 (2 percent biodiesel) or B-20 (20 percent biodiesel) blends.

Among backers of biodiesel use is the American Trucking Association, which endorsed in October 2005 an energy resolution that includes promoting low blends of the fuel as part of their efforts to help shape a strong national energy plan.

Biodiesel also can be blended with heating oil. As biodiesel use increases, it is expected to improve the balance between environmental concerns and fuel efficiency.

*Trucker Troy Lyons fills up at the biodiesel pump in Mt. Jackson. He said the blended fuel burns cleaner than regular diesel and has given his truck greater pulling power on hills.*



Kelly Pruitt

# Making the grade: Biodiesel use takes off in the Valley

By Kelly Pruitt

If a deep breath around Interstate 81 in the Shenandoah Valley feels cleaner than on other areas of the highway, it might be more than just the fresh mountain air.

As interest in alternative fuels increases throughout the commonwealth, many valley farmers, truckers and city officials are filling up their tanks with biodiesel.

According to the National Biodiesel Board, biodiesel is one of the most thoroughly tested alternative fuels on the market. Research has been performed by the U.S. Department of Energy, the U.S. Department of Agriculture and Stanadyne Automotive Corp., the largest diesel fuel injection equipment manufacturer in the country. Studies have shown collectively that biodiesel performs similar to petroleum diesel while benefiting the environment, stimulating local economies and displacing some foreign fossil fuel use.

## JMU leads the way for biodiesel

James Madison University in Harrisonburg has been conducting its own biodiesel research since 2002.

“Biodiesel is attractive from a variety of angles—agriculture, environment and energy security,” said Dr. C.J. Brodrick, co-director of the school’s Alternative Fuels Program. “It can be produced locally from crops, which is economically stimulating for the farmers and the communities where the feedstock is grown and the fuel is manufactured. It can also be made from waste veggie oil, which is a form of recycling.”

Students in the program use new and waste vegetable oil to produce biodiesel for their lab projects. Current projects include a “bio bike” that will run entirely on biodiesel and a biodiesel/electric hybrid all-terrain vehicle that will be delivered to Shenandoah National Park in April under the University National Park Energy Partnership Program. The park uses biodiesel in its fleet vehicles.

Biodiesel is produced by a chemical reaction between methanol (or ethanol), lye and an oil or fat. Oil is extracted, purified and heated at 140 F for two hours. As it cools, the mixture separates into biodiesel on top and glycerol on the bottom. The glycerol ultimately is drained off.

“A lot of farmers come to us wanting to use their own crops” to produce biodiesel for their own use, Brodrick said. “The process needs to be done safely. You can’t make it in your blender.”

Currently, the only large-scale biodiesel production plant in Virginia is located in West Point. It uses a soybean feedstock.

## Biodiesel hits the road

For transportation, biodiesel can be mixed in any proportion with diesel fuel. It is recommended for use in vehicles made after

1993 in blends up to 20 percent biodiesel and 80 percent diesel, called B-20.

“The biggest misconception about biodiesel is that you have to make alterations to your vehicle before using it,” said Dr. Chris Bachmann, the other co-director of JMU’s Alternative Fuels Program, “But the fact is, most diesel engines will run on biodiesel without any changes whatsoever. The main concerns with running biodiesel in an older vehicle involve the solvent characteristics of the fuel, which can loosen up years of hydrocarbon buildup in the engine and may affect rubber-based components of the fuel system. You may have to change out a few hoses and gaskets to ones that are biodiesel-compatible, but these parts are readily available. And, if you start with a biodiesel blend and gradually increase the percentage of biodiesel in the fuel you use, you can actually improve the performance of



Kelly Pruitt

*Biodiesel can be mixed in any proportion with diesel fuel and emits lower percentages of carbon monoxide, unburned hydrocarbon and black soot. Harrisonburg bus driver Aaron Smith-Walter (next page, top) said he’s noticed a difference since the city began using the fuel in its bus fleet in 2004.*

your engine by literally driving your engine clean.”

In April 2004, JMU administrators announced that all their diesel vehicles and diesel heavy equipment would run on no less than 2 percent (B-2) soybean-based biodiesel, after a successful yearlong pilot study of B-20 in the campus recycling trucks. The city of Harrisonburg followed suit six months later, announcing it would start running the city’s fleet vehicles on B-2 with some buses running on a B-20 blend.

“JMU pushed us to do something, and electric and propane were not the way to go,” said Reggie Smith, director of the Harrisonburg Department of Public Transportation. “We needed to do something environmentally, and biodiesel was a no-brainer.”

Smith, who is also a Rockingham County soybean grower, said there have been no maintenance issues caused by the switch so far, and he has even noticed a little improvement in some vehicles’ fuel mileage.

At first Aaron Smith-Walter, a Harrisonburg bus driver, was concerned about his bus’ performance when the city switched to biodiesel. “I carry heavy passenger loads,” he said, “so I expected a noticeable power loss, but my fear was unfounded.”

What Smith-Walter immediately noticed was the odor. Biodiesel emits lower percentages of carbon monoxide, unburned hydrocarbon and black soot, causing less smoke and a cleaner smell.

Both JMU and Harrisonburg fleets purchase biodiesel from Holtzman Oil Corp., which holds B-100 at three bulk plants in the valley. The company markets B-5 blends at some of its retail locations and sells about 500,000 gallons annually in the summer and about 350,000 gallons in the winter.

The Holtzman Express-Shen Truck Center in Mt. Jackson saw about 50 percent of its sales coming from biodiesel last summer.

“I’ve been using biodiesel for three months,” said customer Troy Lyons. “My

truck runs quieter and has better pulling power on hills.”

### Valley farmer reaps bio-benefits

Truck drivers aren’t the only ones benefiting from biodiesel. Augusta County producer Danny Wampler says farmers have the real advantages.

“Biodiesel creates a demand for farmers,” he said. “Farmers can start using some of their idle land to fill the extra demand for growing more soybeans and corn.”

Frustrated with the prices at the pumps, Wampler first became interested in biodiesel after listening to the trucking channel on XM radio. Country singer Willie Nelson, a spokesperson for biodiesel, is a featured guest.

“The good thing about high fuel prices is that it brought more attention to alternative fuels,” Wampler said. “The cost difference may not be significant, but you will save money down the road because biodiesel will extend the life of your engine.”

Wampler has been using a B-20 blend in his farm truck since April 2004, and changing the fuel filters has been the only repairs it has needed.

He said biodiesel also has helped him do his part in protecting the environment and his health. “With all the environmental regulations (farmers) have to follow, biodiesel will solve many of them without our having to spend the money.”

In 2002, the U.S. Environmental Protection Agency released a 669-page health assessment that showed long-term exposure to diesel exhaust is likely to be carcinogenic to humans. With two-thirds of all farm equipment powered by diesel, farmers face a high risk.

“We need to produce enough (biodiesel) for equal distribution,” Wampler said. “There is a world of people out there who want consistency. And biodiesel is better than what’s out there.”



Kelly Pruitt

### Biodiesel use by commercial, municipal fleets

More than 500 commercial fleets nationwide use biodiesel, available at more than 400 retail sites and from more than 1,400 distributors.

In June 2005, Arlington County was honored by Virginia Clean Cities for having the largest fleet of biodiesel-fueled vehicles of any Virginia jurisdiction. More than 40 percent of its 1,346 vehicles—large trucks, school buses, dump trucks, backhoes, leaf collectors and some fire-fighting equipment—use biodiesel.

Other biodiesel users include NASA Langley Research Center and George Washington Memorial Parkway, which uses about 16,000-20,000 gallons of B-20 a year in about 12 dump trucks and 25 to 30 other vehicles



Kelly Pruitt