



*Earl Hendrix of Raeford uses soy biodiesel on his farm. He chairs the grain growers association which is behind the facility to be built in Mount Olive for producing local soy biodiesel.*

# Soybean Energy

North Carolina soy biodiesel is catching on as a locally-produced fuel

*By Sidney Cruze*

**A**t Edward Holmes' Exxon on Roxboro Road in Durham, Pump No. 7 stands in line with the other gas pumps, waiting for someone to pull in and fill 'er up. But unlike the other pumps, No. 7's front panel shows a blond boy standing amidst a field of yellow flowers. Close by, a sign reads "Just Pump and Go," "Support our Farmers," and "Protect our Environment" in green letters. And the pump's nozzle will fit in your tank, but it won't give you unleaded gasoline. Pump No. 7 delivers only Biodiesel B20.

B20 is diesel fuel made with 20 percent biodiesel, a petroleum-free fuel made from renewable sources such as soybean oil. Only four pumps in the state sell B20, but together with 19 other biodiesel distributors they deliver 1.5 million gallons of the fuel each year. Soybean farmers are some of biodiesel's biggest champions. Soybeans are the perfect rotation crop in North Carolina, and one bushel can produce 1.5 gallons of biodiesel fuel. As long as demand for it continues to increase, this alternative fuel promises to be a boon for the 22,000 farmers who grow soybeans in our state.

Making biodiesel is not complicated. If you take 10 gallons of any vegetable oil, then add one gallon of methyl alcohol and some sodium hydroxide—commonly known as boxed lye—you

create 10 gallons of biodiesel fuel and one gallon of glycerin. The lye acts as the catalyst for the chemical process called transesterification, which replaces the mixture's glycerin molecule with an alcohol molecule.

The end product is a clear yellow-gold liquid that is non-toxic and biodegradable. "You can use it on your hands, like you would a lotion," says Jim Wilder from the North Carolina Soybean Producers Association. "You can even drink it. It won't hurt you."

Wilder can quickly list biodiesel's benefits. The fuel is 10 times less toxic than table salt. It mixes completely with regular diesel and doesn't separate, making blends like B2, B5 and B20 easy to use in regular diesel engines. It is an excellent lubricant, so it enhances engine performance. Engines running on biodiesel emit fewer hydrocarbons, which means less smog and ozone in the air, and biodiesel doesn't contain sulfur like regular diesel does. (Sulfur oxide and sulfate emissions are two major components of acid rain.) Finally, biodiesel is made from renewable sources grown here in the United States, so it reduces our dependence on foreign oil.

As executive vice president of the state's Soybean Producers Association, Wilder is most interested in promoting the economic advantages biodiesel offers for North Carolina farmers.

“I want to help farmers have a better life,” he says. “Our goal, and the goal of the national soybean association, is to get as many distributors as possible to make biodiesel available to growers, then have them use it. This increased use will enhance income for soybean farmers by approximately \$5 per acre.”

Wilder gets his numbers from a U.S. Department of Agriculture study indicating that if all farmers used B2 to run their farm equipment, the increase in soybean demand would raise national soybean prices by 17 cents per bushel. In North Carolina, farmers grow an average of 34 bushels of soybeans per acre, so that would be a \$5.78 increase in income per acre.

Wilder estimates that today more than 300 North Carolina farmers use a B2 or B5 blend. They started buying biodiesel locally in February 2003, when Brian Potter became the state’s first biodiesel distributor. Potter’s company, Potter Oil & Tire Company Inc. in Aurora (served by Tideland Electric), is now one of two suppliers in the state. The Grain Growers Cooperative is the other. Potter gets the fuel shipped here in 25,000-gallon rail cars from West Central Soy in Ralston, Iowa, and supplies vehicle fleets, such as those employed by the N.C. Department of Transportation and the cities of Raleigh, Durham, Chapel Hill and Charlotte. Almost every month, he sells more biodiesel than he did the month before.

“We get calls every day from farmers who want to use it,” Potter says, “Nobody is twisting their arm, even though the costs are higher.”

### The price for local fuel

Perhaps the only down side to biodiesel is that it does cost more than petroleum diesel. Users will pay an extra two cents for each percent of biodiesel in a gallon of fuel. For example, if you buy 10 gallons of B20 (20 percent biodiesel), you’ll pay 40 cents more per gallon than you would pay for regular diesel fuel. If you use 100 percent biodiesel fuel, or B100, you will pay \$2 more per gallon.

As an incentive to use it, a tax credit soon will be available for businesses that blend and distribute biodiesel. The tax credit will reimburse users for half the extra price they pay.

“The credit will be a benefit to individual users if the dealers pass that savings on to us,” says James Fletcher, a Pasquotank County farmer and member of Albemarle Electric, who is president of the Soybean Producers Association.

Fletcher began using a B5 blend of biodiesel in his tractors and combines two years ago. He’s convinced the fuel’s high lubricity will help decrease the wear and tear on his equipment.

Like many farmers, Fletcher buys his fuel from a distributor who puts the correct proportions of diesel and biodiesel together in one container and lets them mix together during the delivery drive. The technique is called splash blending. The B5 is completely blended by the time it gets to Fletcher’s farm, where he stores it in a 2,000-gallon tank.

In Iredell County, soybean grower Henry Walker uses a B5 blend because it is a renewable fuel that won’t harm the environment. “It breaks down in the same time it takes sugar to decompose, plus it has the best health rating of all fuels,” he says.

Pitt County Memorial Hospital uses biodiesel in its ambulance fleet to protect the health of accident victims.

“Ambulances often must stay at accidents with their engines idling, and people end up breathing the toxic diesel fumes,” Wilder says. His organization awarded the hospital \$55,000 to help cover the costs of a building a storage tank and fuel island for the biodiesel fuel.

The Soybean Producers Association is not the only state group promoting biodiesel. In 2002, the Golden LEAF Foundation announced a \$10 million investment in a proposed biodiesel plant for eastern North Carolina. Land has been sited in Mount Olive, and Wilder has hopes the plant will open within 12 months.

“It would be one of the few plants on the east coast,” he says. “When it opens we expect it to produce 20 million gallons each year, not just from soybeans, but from all seed oils.”

On a more personal level, Walker would like to see more distributors in the state, so he spends his free time making presentations about biodiesel’s benefits throughout the Piedmont. “It is one of those things that has come along that is really good,” he says. “I could talk about it all day.”

One of the biggest supporters in the state is Rep. Joe Tolson, representing Edgecombe and Wilson counties. He has actively promoted the fuels on the state’s Energy Policy Council and has connected the producers with state government users, such as the Department of Transportation fleets. “There are excellent possibilities for producing and using both biodiesel and ethanol fuels in our state,” he says. “These are energy sources that come from our own area. It can mean a lot to farmers and the economy in general.”

*Sidney Cruze is a Carolina Country contributing writer. She can be reached at [sidneywrites@verizon.net](mailto:sidneywrites@verizon.net)*

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### For more information:

North Carolina Soy Producers Assn.  
211 Six Forks Road, Suite 102  
Raleigh, NC 27609  
Phone: (919) 839-5700  
Web: [www.ncsoy.org](http://www.ncsoy.org)

Jim Wilder



*Curtis Potter and his son Brian of Pamlico County are regional distributors of biodiesel fuel. Curtis is shown here at the plant in Aurora where biodiesel is blended.*

