



**BIOPRO DETAILS:** The BioPro 380 from Springboard Biodiesel, Chico, is fully automated, taking 48 hours to convert 100 gallons of vegetable oil or animal fat into 100 gallons of biodiesel. An addition of the Incosep probe can cut this processing time in half. The BioPro 380 control panel is shown here.



**FARM SERVICE STATION:** Paul Totman (standing) and Scott Lunsford are pictured at their farm shop with the BioPro biodiesel processor. The diesel fuel pump is in the foreground.

# Farm to fuel

By ERIC MCMULLIN

**A**PAT on the back from the boss is always nice. And a promotion doesn't hurt, either.

So it is that Paul Totman and Scott Lunsford find themselves promoted to heads of the newly created two-man R&D department for the Colusa Indian Community Council. The council owns the Colusa Casino, and farms 4,500 acres of rice, almonds, walnuts and wheat.

Totman was — and still is — the construction supervisor for the council when he and Lunsford hit on the idea of converting used kitchen grease from the casino into biodiesel for their construction equipment. Exploratory testing has worked so well that they now hope to produce the entire 100,000 gallons of diesel fuel needed annually by the farm.

The casino uses enough kitchen grease to produce 4,000 gallons of biodiesel annually. The rest will be from farm biomass.

"Just about every crop has some amount of oil in it," explains Totman. "Right now, we are receiving oil from sunflower screenings and almond shells at a 90-10 blend from a grower just to the north. Next is to tap into our own ag waste stream, completing the cycle. Technology that has caught our attention, though it is not commercially viable at the moment, is converting rice straw into ethanol to make biodiesel."

## The economics

Totman estimates that 100 gallons of kitchen grease converts to 97 gallons of biodiesel and 20 gallons of glycerol, a by-product added to water to dust the farm's gravel roads. The cost of the biodiesel — after accounting for inputs, energy, labor, and component replacements over seven years — is about \$1.50 per gallon. This figure can be cut to less than a dollar a gallon by substituting sodium hydroxide

## Key Points

- Farm to produce 100,000 gallons of the diesel fuel it needs annually.
- The cost of biodiesel is \$1.50 per gallon, but this can be cut to less than \$1.
- The farm uses a 50-50 mix of straight diesel and 100% biodiesel.

for potassium hydroxide, and ethanol for methanol, says Totman. Also, tax credits on the purchase of equipment and production are available, but will vary by grower. And there may be feed value in meal left over after processing.

The sunflower screenings and almond shells come from Arlo Becker, who grows 500 acres of corn and sunflowers for seed outside of Princeton.

"The screenings are off-grade seeds that are too small to sell," explains Becker. "Now, they're usually sold as cattle feed. We extrude the oil from the screenings, and then send the oil to Paul, who sends us back the fuel for use on our farm. And we can sell the meal for about \$200 a ton."

## Biodiesel meets federal standards

The biodiesel Totman makes meets federal standards for biodiesel fuel, and both Becker and Totman use it successfully on their farms.

"We ran a 50-50 mix with straight diesel and 100% biodiesel," reports Becker. "We ran it in both a new tractor and a 7-year-old tractor, and it worked fine. The diesel engines run quieter, perform equally well — and the only difference is the french-fry exhaust smell. In our pickup truck using biodiesel, we've documented fuel-mileage improvements."

Totman and Becker say the concept should be an option for any grower.

The biggest up-front cost is the biodiesel processor. Totman has a

BioPro 380 from Springboard Biodiesel in Chico, which cost \$13,000. The BioPro is a fully automated processor that takes 48 hours to convert 100 gallons of vegetable oil or animal fat into 100 gallons of biodiesel. Totman added a Springboard Incosep probe, which cuts processing time in half, for another \$5,000.

Springboard sells most of its processors to entities that use recycled restaurant oil. "But we quickly realized that agriculture is one of the biggest users of diesel fuel, and farmers have the ability to raise their own biomass," explains Mark Roberts, Springboard CEO. The BioPro processor was displayed at the 2006 World Ag Expo, where it was named one of the Top 10 innovative products. Springboard acquired the parent company of the BioPro 18 months ago.

There are a number of biodiesel processors available and the market is still sorting itself out, says Roberts. Growers will want to look at the volume a given processor can produce, the variety of feedstocks it can handle and the quality of biodiesel it produces.



**FARM-GROWN FUEL:** An operator fills a tractor tank with farm-grown biodiesel. The biodiesel meets federal standards, and has been used successfully in new and used tractors and pickup trucks. The only noticeable difference is the french-fry smell of the exhaust.

## News Net Briefs

### California beef packer announces second beef recall

Beef Packers, owned by Cargill, has announced a recall of ground-beef products in early December, the second time in 2009, reports *USA Today*. The Fresno-based company said products sent to stores in Arizona and New Mexico might contain a drug-resistant strain of salmonella.

### Two men executed in China for tainted milk scandal

China executed two men for the melamine-tainted milk powder scandal that killed six and sickened 300,000. Zhang Yujun received the death penalty for endangering public safety, and Geng Jinping for producing and selling toxic food. The pair were the only ones executed over the contamination, although 19 others have been jailed.

### Federal injunction filed against Maryland veal-calf dealer

The Department of Justice, on behalf of the Food and Drug Administration, has filed for permanent injunction against William F. Nickle of North East, Md., for allegedly selling veal calves for human consumption that contained illegal drug residues. It also alleges that he used drugs in animals in which such drugs are expressly forbidden.

### Agriculture secretary considers fruit and vegetable rewards

Agriculture Secretary Tom Vilsack said schools that serve more fruit, vegetables and whole grains should receive additional federal funding. "It is important for us to reward top performers," he told a Senate committee.

### FDA asks consumers how they use Nutrition Facts labels

The FDA is taking a closer look at how consumers use the Nutrition Facts labels printed on packaged foods with a survey of 3,600 people, reports *FoodNavigator*. The agency hopes to learn the importance of calorie count, serving size and nutrient information.

### New aerial application guidance system debuts at convention

Hemisphere GPS unveiled its Air IntelliStar at the annual National Agricultural Aviation Association Convention, Reno, Nev., last month. "IntelliStar gives pilots the ability to fly and spray precise patterns, reducing flight time and input costs by minimizing skips and overlaps, and maximizing the precision of the application," says Kip Pendleton, Hemisphere GPS vice president.

### Latest recession causes food insecurity to rise sharply

The number of U.S. households unable to put adequate food on the table increased sharply during the latest recession, reports a story in the December issue of *Amber Waves*, a USDA Economic Research Service publication. This is the highest level recorded since USDA began monitoring household food security in 1995.