

Mobile Oilseed Processor Helps Farmers Make Their Own Fuel

By Dee Goerge, Contributing Editor

Dan and Mark O'Brien grow canola, extract its oil, and use the oil to fuel their tractors and equipment. Dan's son, William O'Brien, and son-in-law, Dale Nelson, built a mobile processor on a 28-ft. semi-trailer that can be moved from farm to farm and produce 80 gallons of canola oil every 24 hours. In addition, the processor extrudes the leftover canola meal into pellets, which can be fed to cattle or used in a pellet stove.

With high diesel fuel costs for their 1,000-acre hybrid seed operation, the Brooklyn, Wisconsin, brothers first considered using soybeans to make biodiesel fuel. But they didn't like the high cost of setting up, the low percentage of oil in the seed, the need for methanol and water for the process, and the need to cook the soybean meal before it could be fed. When they learned that German farmers were burning canola oil straight in their tractors, it seemed to be a simpler solution, plus they could save 80 cents/gallon by not having to convert the oil to biodiesel.

With the help of a couple research grants, William says he and Nelson spent two years researching and building the processor.

"The idea of a mobile processor is a really solid idea," William says. "We think it might present a great opportunity to co-ops to rent mobile processors to farmers in the area."

The processor runs off a 220-volt outlet. Canola seed is augered from a 160-bu. bin through a rotary cleaner, across a de-stoner and into a screw-style oil press. The oil flows into a settling tank, and is ready in 24 hrs. to pump through filters and a clarifier into a storage tank or a tractor's fuel tank. The remaining meal is turned into pellets that are augered into another 160-bu. holding bin. Canola meal pellets have 75 percent of the crude protein value of soybeans.

The O'Briens automated the processor with proximity switches and voltage frequency drives, and other than cleaning the settling tank and emptying the meal, there isn't much labor to operating the system, William says.

Each bushel of canola produces about 2 1/2 gal. oil. For about the past 6 mos. the O'Briens have been running a blend of straight vegetable oil and diesel in their diesel tractors - experimenting with ratios up to 99 percent canola oil - without any engine modification at all. "You can get away with running a higher percentage of veggie oil in the summer when it's hot," William notes. "But when the oil gets thicker in cold weather,

it must be blended down or run through a converter to lower its viscosity.

"To minimize wear and carbon build up in the engine a converter is really the best way to go," he explains. "Vegetable oil is thicker than diesel fuel and needs a hot working engine to atomize properly in the cylinders. With a two-tank conversion kit fitted on one of our tractors, we start up and shut down on diesel, but while the tractor is working, we'll switch it over to straight canola oil. It runs and smells great, and there's no noticeable power loss."

The O'Briens invested in one conversion kit that cost \$3,000, but believe they can make one for about \$1,000 with off-the-shelf parts.

Producers determine costs in different ways, but William says that figuring \$2.50/gallon for fuel, plus the meal, a bushel of canola is worth about \$10.

"By going through the processor you're adding value and saving money," William says. "Here diesel is \$2.60 for off-road, so you save a little bit on fuel, plus you have free feed value. Of course you have the processor set up cost to offset, but that's why we made it mobile; that cost is recouped as it's rented out."

The O'Briens have used more than 2,000 gal. of canola oil in their equipment so far in 2007. They estimate that farmers could yield over 100 gal. per acre growing canola. The O'Briens are experimenting with spring and winter varieties as well as double cropping.

While their processing unit cost \$20,000, William notes that farmers could make them for a lot less using bins and equipment they have on hand. They're willing to share information about their processor with others.

"Our primary motivation is not just to have cheaper fuel, but to promote an alternative to being dependent on oil," William says. "Running straight canola oil is the best and cheapest way we've found to do it."

Using straight vegetable oil also attracts the attention of people who believe fossil fuels are to blame for global climate change. Using the oil results in a 68 percent reduction of carbon emissions, compared to diesel.

Contact: FARM SHOW Followup, O'Brien Farms, 552 Glenway Rd., Brooklyn, Wisconsin 53521 (ph 800 925-2676; obrienfarms@hotmail.com; www.obrienhybrids.com).

Mobile oilseed equipment mounts inside a 28-ft. semi-trailer that can be moved from farm to farm.



Unit can produce 80 gal. of canola oil every 24 hours and extrudes the leftover canola meal into pellets, which can be fed to cattle or used in a pellet stove.



The O' Brien's burned more than 2,000 gal. of canola oil in their equipment in 2007. Extruder squeezes oil out of canola and makes "pellets" out of the meal (left).

Industrial Loader Turned Into "Snow Machine"

Joe Germuga of Rochester, N.Y., converted a used 1978 Ford 3550 industrial loader tractor into a snow-moving machine with a big bucket and a 3-pt. mounted blade on back.

He bought the tractor for \$4,000. It came from a local school district and didn't have a lot of hours on it.

He couldn't fit the tractor's cab in his storage shed so he removed it. A fabrication shop reworked the oversized fenders.

The tractor came equipped with a 66-in. dirt bucket, but Germuga wanted something bigger so he replaced it with a home-built 95-in. wide bucket. He also used sheet metal and steel tubing to build the blade, which is a little wider than the tractor's tires.

"It works great because I can back up to a building and use the blade to drag snow away from it, then use the bucket to push the snow into the street. The blade is built strong

enough to also spread dirt or crushed stone," says Germuga.

The bucket has a Case loader cutting edge that's reinforced with some hard steel cutting edges salvaged from a highway department scrap pile.

The tractor was completely sandblasted, epoxy primed and painted safety yellow. It's equipped with a home-built safety glass windshield, which can be folded down. "I made the frame and a glass shop installed some used safety glass in it," says Germuga.

There's a home-built, 16-ga. hinged metal door on the left side of the tractor and a solid "filler panel" on the other side to block the wind. His wife used some canvas to make a "comfort cover" that covers both sides of the engine and channels heat back into the operator's area.

"The combination of the comfort cover,



Joe Germuga's Ford 3550 industrial loader tractor has a big bucket and a 3-pt. mounted blade on back. "It works great for dragging snow away from buildings," he says.

filler panels, and windshield keeps me comfortable. I can operate all day long in real cold weather with overalls and a jacket and still keep plenty warm," says Germuga. "I had tried using a factory 'comfort cover', but my

wife's model works a lot better."

Contact: FARM SHOW Followup, Joe Germuga, 51 Hartfeld Drive, Rochester, N.Y. 14625 (ph 585 288-3579).