McAmoil uses this Chinese-built screw press to squeeze the oil out of 100 acres of soybeans and sunflowers. A slow speed Listeroid 2-cyl. diesel engine belt-drives the unit.

Oil produced by the screw press can be used to operate the Listeroid engine, as well as any other diesel engine on the farm.

By Bill Gergen, Senior Editor

He Grows And Processes His Own Biodiesel Fuel

If you can grow field crops, you can grow your own diesel fuel, says Dan McAmoil, Penokee, Kansas. He recently bought a Chinese-built screw press from an importer-exporter in Oregon and uses it to squeeze the oil out of 100 acres of soybeans and sunflowers. A slow speed 1,750-lb. Listeroid 2-cyl., 28 hp diesel engine belt-drives the unit. The oil produced by the screw press can be used to operate any diesel engine.

He bought the 6-ton (per day) oil seed press from Flint Hills Diesel and Biofuel (rgroves @flinthillsdiesel.com; www. flinthills diesel.com).

"I'm on single phase electricity and it would cost me about $600 per month in electricity to operate an electric motor that would operate the press all the time, which I think is too expensive. I can operate the 2-cyl. Listeroid engine on home-grown sunflower oil, which is far cheaper," says McAmoil. "The Listeroid engine uses about two gal. of sunflower oil every six hours. With good sunflowers I can get 15 to 18 gal. of oil per hour. These engines are known to last more than 50,000 hours with proper care.

"I have to grow 500 acres of 100 bu. per acre milo to net enough money to buy all the fuel I need for my farm. But it takes only 100 acres of sunflowers to grow all the fuel I need for my farm - about 11,000 gal. of oil.

"I paid a total of $6,000 for the press and engine. It doesn't take many gallons of fuel to pay that back."

According to McAmoil, growing your own biodiesel fuel is far more practical than using used cooking or vegetable oil. "There isn't enough restaurant oil within a 100-mile radius of my farm to operate my diesel-powered equipment for even two days. A lot of farmers in the High Plains are starting to buy presses so they can grow their own fuel. One farmer is looking at buying several presses so he can operate five different irrigation engines, using 50,000 to 60,000 gal. of fuel per year of home-grown biodiesel fuel. He'll hire someone to operate them full-time all year long.

"Growing your own diesel fuel makes economic sense for farmers. I see it as a matter of our survival."

The press and engine are located inside a machine shed. He bolted the press and engine to a 6-in. channel iron frame and used an engine hoist to place the press on the frame, then bolted it on. He installed chutes on the press, one for meal or cake and one for oil, and directed them to plastic containers alongside the press.

A 4-in. dia. auger delivers soybeans or sunflower seed from a 55-gal. barrel into the hopper on top of the press. The auger is covered with aluminum foil which forms a heat shield, trapping exhaust heat off the engine to preheat the seeds, which results in an extra 3 to 5% yield of oil. Oil drips down out of the press on a catch pan and the meal comes out the other end. The crude oil that comes out is first allowed to settle for three or four days in several big barrels located next to the press. The oil is filtered as it's pumped out using a small fuel transfer pump, into storage tanks outside the building where gas is mixed into it. "I use compressed air to agitate the oil with the added unleaded gas mixture. I do this outside just to be safe," says McAmoil.

A pair of old combine augers take meal away from the press and elevate it so that it can be dumped into a truck.

McAmoil uses gas to adjust the viscosity of the oil so that it's more like no. 2 diesel fuel using a biodiesel hydrometer. "I use unleaded gas to cut the glycerine so I don't have to use a chemical process. During summer I mix one part unleaded gas to 10 parts of sunflower oil, and during winter I mix one part gas to five parts of sunflower oil. This ratio is good down to -5 Fahrenheit for winter use. I can just pour it into engines and go. Adding the gas breaks down the oil's glycerine, which results in more btu's per gallon than chemical-made biodiesel, which removes most of the glycerine. The glycerine is the gun powder, so to speak.

"Normally chemicals are used to extract glycerin, but I don't want chemicals in my meal cake because of health and safety reasons for my cattle."

Last year he bought sunflowers on the open market to try out the idea. "I don't have enough oil to run all my equipment on 100 percent homegrown biodiesel at this time. This is the first year I'll plant oilseed sunflowers, along with some soybeans.

"I'm running at a 30 percent ratio of oil to diesel fuel because I want to ration out what I have made to make it through this year's wheat harvest. I plan to buy more oilseeds and press them for use this fall. After this summer I hope to have enough of my own oil seeds to press everything I grow."

McAmoil says the fuel economy on his 1998 Dodge pickup went up 30 percent using one gallon of unleaded gas, with nine gallons of sunflower oil, and 25 gallons of no. 2 diesel fuel. "My mileage jumped from 18 mpg to 24 mpg with the sunflower oil diesel blend. Adding oil to the fuel also saves wear on pumps and injectors and adds to engine life. Cattle love the meal and several small local feedlots want to buy meal from me, once I produce more than what my cattle can eat," says McAmoil.

How clean does seed need to be for you to press it? If seed is clean enough to plant, it's clean enough to press, says McAmoil. Flint Hills Diesel will soon offer Chinese-made seed cleaning machines.

According to the Flint Hills website, canola and sunflowers are suitable fuel crops. Soybeans and cotton seed can be pressed but should be dehulled first. "From what I've read on the internet in Germany, Canola is going to be the best fuel oil of them all," says McAmoil.

Flint Hills plans to soon offer electric-powered presses with capacities up to 10 tons/day. "A 10-ton press could produce up to 1,000 gallons of pressed oil per 24-hour day," notes McAmoil.

Contact: FARM SHOW Followup, Dan McAmoil, Prairie View Farm, 3340 190th Ave., Penokee, Kansas 67659 (ph 785 567-4490; pvffarm@ruraltel.net).

Self-Propelled Mini Manure Spreader

"I own one of these self-propelled walk-behind manure spreaders and it works great if you just have a couple horses or a few head of cattle," says Lyle Mast, Shipshewana, Ind., about his "Power Haul" spreader from Weaver Manufacturing, Goshen, Ind.

Powered by a 5 1/2 hp Honda engine through a reduction gear, it'll haul and spread up to 15 bushels of manure at a time. It runs at variable speeds and has a reverse gear. The beaters are removable so you can use it as a power wagon. Overall length is 7 ft., 6 in., and it's 38 in. wide.

"It works great as long as you don't put too much hay or straw into it," Mast notes.

Sells for $2,295.

Contact: FARM SHOW Followup, Weaver Manufacturing, 63271 C.R. 31, Goshen, Ind. 46528 (ph 574 642-1300 ext 2050).

Self-propelled, walk-behind mini manure spreader can haul and spread up to 15 bu. of manure at a time.

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