



Flexible steel pipe runs from tractor exhaust back to cooler mounted on air seeder.



Exhaust coming off tractor at high temperatures must be cooled down to around 150 degrees before it's pumped into the ground.

## “Tractor Exhaust” Fertilizer System Goes Commercial

By Bill Gergen, Senior Editor

The idea of turning your tractor into a mobile fertilizer plant is alive and well. The system was on display at the recent Western Canada Farm Progress Show. FARM SHOW first reported on the revolutionary new idea about three years ago (Vol. 30, No. 5).

On display at the show was the big 15-ft. long, 2 by 2-ft. cooling chamber that's designed to install behind a tractor pulling tillage or seeding equipment. Exhaust from the tractor's muffler goes into the cooling chamber. From there it's injected into the ground. On an air seeder, the fan forces the exhaust down through the same hoses that deliver seed and fertilizer to the ground.

“The goal is to reduce the amount of fertilizer needed to grow a crop. At the same time, we hope to lower greenhouse gas emissions,” says Gary Lewis of Cowley, Alberta, who invented the patent-pending system. He has also formed a company, Bio-Active Emissions Technology, to sell the equipment.

When FARM SHOW first reported on Lewis's work, it was still in the very early experimental stage. There were nine farmers in Canada who were testing the equipment. Last year more than 100 farms in the U.S., Canada, and Australia were licensed to use the Bio-Active technology, and this year that figure is expected to reach about 150.

Farmers pay a one-time initial technology use fee of \$15,000 which is used to continue research and development.

“We're collaborating with farmers around

the world, learning together, and applying science with machinery. We're also getting support from industry and input from scientists and engineers from around the world,” says Lewis. “We've tested the idea on several different crops including peas, wheat, oats, canola, soybeans, and potatoes.

“Systems are fabricated on a first come, first served basis. The technology use fee holds your place in line for the next system fabricated by our worldwide installation teams.”

Much of the research has gone into using computers to match the system's output with soil types and the crop needs. “We're custom blending different fuels to produce different types of fertilizer, depending on the crop's history and nutrient requirements. And we're testing all different sorts of fuels, including biofuels, and how to modify the engines to put out the maximum amount of exhaust.”

Lewis notes that the same idea is often used in greenhouses where carbon dioxide is pumped in to stimulate growth. “In many cases our system allows farmers to grow corn without using commercial fertilizer. And they're growing higher quality corn that tests higher in minerals and nutrients.

“The biggest advantage is that we're increasing microbial activity in the soil dramatically, which helps break down nutrients. The exhaust helps stimulate the nitrogen fixing bacteria without destroying microorganisms



Exhaust gas on this Deere mower is injected under the deck after running through cooling coils.

in the ground like anhydrous does.”

A big challenge was figuring out how to sufficiently cool the exhaust, he says. “The exhaust coming off the tractor at high temperatures must be cooled down to about 150 degrees so it won't melt hoses and pipes.”

To draw attention to his exhibit at the Regina show, Lewis also displayed a push mower designed to pump exhaust fumes to grass as the lawn is mowed. Exhaust is routed from the mower's muffler through coils,

which serve as a cooling chamber and then under the mower deck to stimulate growth.

“We're testing the same idea on riding mowers. We take tissue samples every 10 to 14 days to monitor the benefits,” says Lewis.

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## New Ways To Eliminate Mosquitoes

Nothing can zap the fun out of a summer evening in your backyard like hordes of biting mosquitoes. Here are a couple of new ways to eliminate them.

The Mosquito Deleter trap takes advantage of mosquito behavior. When females drop eggs, they look for dark places and smell for stagnant water where algae will grow to feed their babies in the larvae stage.

The traps provide a perfect egg-laying environment with their black attractor cones. Inside, algae grows on water with the help of a couple of algae-based tablets. The female lays her eggs in the cone and they drop in the water. Then she flies away and dies within a day. The offspring (1,000 to 4,000) never make it out of the trap.

“We suggest you don't empty the trap because the dirtier it is the better,” Shaffran says. The traps can be hidden in shrubbery, hung on fences or placed anywhere on the ground. Just add water to the fill-line every 7 to 10 days and add one tablet each month. It takes two to three weeks to take full effect, but because mosquitoes live their whole lives



Mosquito Deleter trap (left) lures female mosquitoes to lay their eggs in black “attractor” cones. Skeet-R-Gone injects chemical into underground sprinkler system.

within a 150-ft. radius, it's possible to get rid of most of the mosquitoes in your yard. Culex sells four traps and tablets for two months for \$29.95 to cover up to one acre.

Mosquito control is most effective when there are no other stagnant water sources for the mosquitoes to hatch in.

“People like this system because all you do is add water to the traps. You don't have to spend any more money, and it's not harmful to people or the environment,” Shaffran says.



Skeet-R-Gone Inc. eliminates mosquitoes by injecting a chemical into an underground sprinkler system. Barbara Howard, general manager, says the system is simple and effective. She knows because she is using it for the third season on her Horace, N.D., yard.

“It takes less than an hour to install,” Howard says. “After that it takes just 5 to 10 minutes once a week.” Skeet-R-Gone has a control panel placed next to the irrigation panel and hooks into the irrigation lines with

a saddle valve or T-fitting. Liquid concentrate is injected with a 160 psi pump. The system comes with instructions to calibrate it for your water pressure and the size of your irrigation zones.

While the system can use any chemical, the company sells Bug Slug with the system.

“It's eco-safe using natural oils and has a lemon scent,” Howard says. The ingredients act as suffocants, which kill adult mosquitoes and larvae, gnats, no-see-ums, spiders, fire ants and many other insects. Bug Slug is aquatic safe and doesn't harm pets - in fact, it kills fleas and ticks.

The \$699 system has a one-year warranty. Two 32-ounce bottles of Bug Slug at \$69 each are enough for one season. Local dealers can be found on the Skeet-R-Gone website.

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