

# New way to incorporate manure



Phil Borgic is field-testing a Howard Rotavator for incorporating hog manure pumped to the field.

**Phil Borgic** (inset) pumps manure to outlying fields through pipes and hoses, then incorporates it with a PTO-driven rotary tiller.

By Rich Fee  
*Crops and Soils Editor*

Applying manure will never be fun, but Phil Borgic has found ways to make it less unpleasant. Perhaps more importantly, the Nokomis, Illinois, pork producer has found ways to better utilize the nutrient value of the manure in his lagoons.

The first big change came four years ago when Borgic adopted a drag line system to pump manure to the field through irrigation pipe and hoses rather than hauling it in liquid manure tanks (see sidebar). That system makes it feasible for Borgic to apply the amount of manure his crops need in

fields up to a mile and a half from the lagoons, instead of overapplying it to nearby fields just to get rid of it. (Systems with booster pumps can pump liquid manure even farther.)

"When you're using a tank system, you don't get any farther from the barn than you have to," he says. "And a lot of the time you run out of manure toward the end of the field or get varying flow. Consequently, one end of the field gets fewer nutrients."

## Environmental benefits

The change to pumping manure through pipe and drag hoses bodes well for the environment, and for Borgic's bottom line as well. It enables

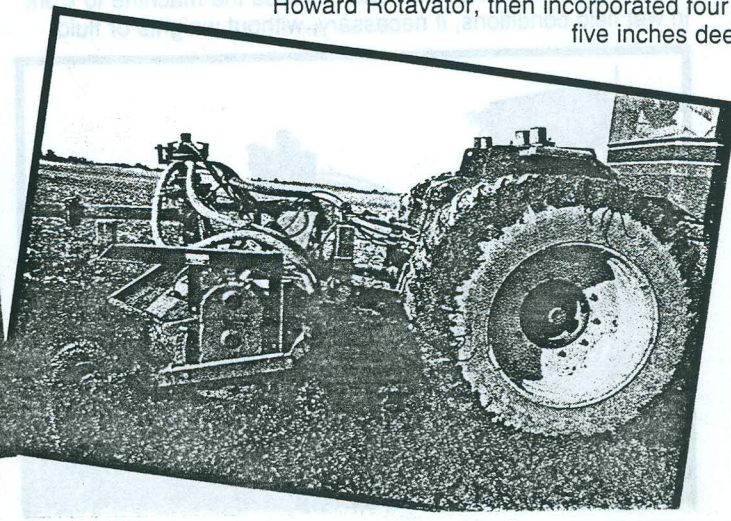
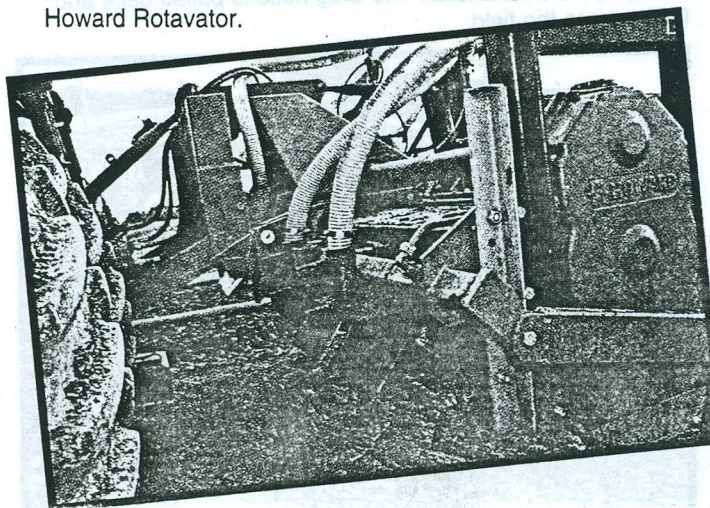
him to apply liquid manure to fields based primarily on nitrogen needs.

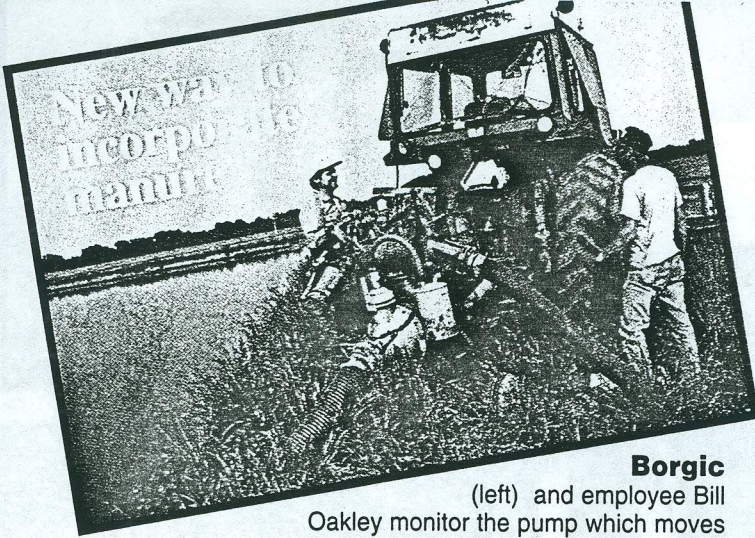
"Every acre that doesn't need commercial fertilizer [N, P and K] saves me at least \$50," Borgic explains. "We're rotating fields now, and doing a much better job of matching application to crop needs. I only put anhydrous on 40 acres of corn out of 300 this year," he says. And by pumping to fields he never hauled to, he will be able to gradually raise P & K levels on those fields.

Borgic so prizes the manure for its nutrient value that he thinks of his lagoons as secondary nutrient holding ponds rather than waste facilities. "Some of the best fertilizer on this

**Hydro Engineering, Inc.** (612/467-3100) designed and built the manifold attached to the front of this Howard Rotavator.

**Liquid manure** is spread uniformly in front of the Howard Rotavator, then incorporated four to five inches deep.





**Borgic** (left) and employee Bill Oakley monitor the pump which moves manure from the lagoon to the field through pipe and polyester hoses encapsulated in a urethane elastomer.

## Hose replacing tank wagons where manure volume is high

Drag hose systems have significantly reduced the amount of time and labor needed to move large volumes of liquid manure. Phil Borgic pumps 40,000 gallons per hour. That's approximately seven times what he is able to haul in an hour with a 3,000-gallon tanker.

Commercial applicators can pump even more per hour. Rick Alton of Alton Irrigation, Inc. in Rock Falls, Illinois (815/438-2730), says he routinely pumps 45,000 gallons of liquid manure per hour, and incorporates it with a chisel plow.

Alton has done custom application and sold equipment since the mid-'80s. He says tank systems are competitive for volumes under 300,000 gallons, but above that the drag hose systems are more economical. For volumes of less than 300,000 gallons, typical rates are about a penny per gallon for pumping and application. Rates can drop to seven-tenths of a cent per gallon for volumes over a half-million gallons.

Alton says 2 miles is about the "economical limit" for pumping. Aluminum irrigation pipe or 6-inch transfer hose carries the manure to the field, where it is transferred to a hose, which is pulled back and forth across the field by application equipment.

That hose is made of a polyester woven fabric encapsulated in urethane elastomer. A 4½-inch hose retails for \$8.50 per foot and has a life expectancy of approximately 30 million gallons. ■

earth comes out of our hog buildings," he says.

Borgic also saves a lot of time and labor by pumping manure to the field rather than hauling it. "The most we can haul with a 3,000-gallon tanker is 6,000 gallons per hour," he says. "And that's if the field is next to the lagoon.

"We can pump about 40,000 gallons per hour to outlying fields. The farther out you go, the more the savings multiply because of the travel time. You waste all that time on the road.

"Before," he adds, "we had to haul five or six times a year for three or four days at a time. Anytime we could haul, we would haul. It was always on the list. Now, we pump for two or three days, twice a year."

### Incorporate liquid manure

Until this year, Borgic used a chisel plow with sweeps to incorporate the manure, which was pumped to a manifold on the front of the chisel plow.

This year, Borgic is field-testing a Howard Rotavator furnished by Guy Machinery, the Midwest distributor (Woodstock, Illinois; 815/338-0600).

It has PTO-driven blades that incorporate the manure.

So far, he likes what he sees. "We had a wet spring, and the lagoons were getting full," says Borgic. "The Howard Rotavator enabled us to get on the fields a day or so sooner.

"With the chisel plow, the manure puddles underground and is very slow to dry," says Borgic. "With the Rotavator, we're spreading the manure over more soil particles and it dries more quickly."

Borgic says the Howard Rotavator also leaves the fields in better condition than the chisel plow does. "With the chisel plow, I find the ground gets a little slabby. Plus, the sweeps leave high ridges," he says. "But with the Rotavator, the ground is left pretty level. All I did before planting was hit it twice with a light field cultivator."

Borgic planned to run the Rotavator

in wheat stubble late in the summer to see if it handles dry, hard ground as well as it does wet ground.

After using the Howard Rotavator in the spring, about the only reservation Borgic had about the equipment, which he is testing but has not purchased, is the price. "I only paid \$650 for the 12-foot chisel plow I use," he says. A 10-foot HR-50 Howard Rotavator lists at \$18,875. A 13½-foot HR-50 model lists at \$22,100. A heavier, 13½-foot HR-60 model, listing at \$26,950, would be most suitable for the PTO horsepower of Borgic's tractor. **SF**

**PTO-driven rotary blades** actually push the Howard Rotavator through the field. That enables the machine to work in wet field conditions, if necessary, without weights or fluid.

**Rugged mounting hardware** connects the drag hose to the Howard Rotavator. The drag hose is pulled back and forth across the field.

