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Grocery store to farm: recycling food waste into compost
Pennsylvania pioneers a permit that diverts tons of trash weekly from the landfill and turns it into "black gold" for farmers...and that's only the pilot project!

By Dan Sullivan

In-store signage and commitment to employee education at Wegmans grocery store have contributed significantly to the success of the food-waste to farm program.



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March 23, 2004: One man's trash is another man's treasure. The familiar adage certainly holds true on Ken Gehringer's Four Springs Farm, a cash grain operation in Lehigh County, Pennsylvania, where up to 10 tons of food waste from the produce, bakery and other departments of a local high-end grocery store are delivered for composting weekly.

Gehringer is one of two farmers who initially participated in the county's pilot program, along with Wegmans grocery store in Allentown and Chambers Development Company, which specializes in trash hauling and recycling. When the other farmer dropped out of the program after the first demonstration year—because a son who was handling the project went off to college—Gehringer agreed to take on the entire weekly load, which he turns into rich compost for his fields. For his troubles, Gehringer also collects a \$20 per ton tipping fee from the grocer.

Wegmans, which normally pays \$80 a ton to the landfill for disposal, saves about \$16,000 a year by recycling an estimated 40 percent of its waste—with Gehringer help—into valuable compost. Of the compostable material brought to Gehringer's farm each week, about 60 percent comes from the produce department, 30 percent from the bakery and the rest from various other departments.

"I'm lucky to have a job with a county that lets me dream up ways for diverting compostables out of the waste stream and recycling them for farms," said Cary Oshins, composting specialist Lehigh County, developer of the program, and presenter at the Pennsylvania Association for Sustainable Agriculture (PASA) 13th Annual Farming for the Future Conference.

Getting permission and getting organized

The first phase of the project, which began in 1999, Oshins explained, was to demonstrate that it could be done. After a year of planning and bringing on partners, the first load was delivered in 2000. By 2002, the state was convinced enough of the effectiveness of the program to develop a permit to allow farmers to receive up to 500 tons—about 1,000 cubic yards—of grocery store food waste annually. (Previously, a cumbersome solid waste handling permit would have been required.)

One of the main challenges for the grocer, Oshins said, has been to train employees to separate the non-meat, non-dairy, and pre-consumer food waste out for composting. Since this type of waste is typically nitrogen rich, the county does its part by bringing the farmer several hundred yards of carbon-rich material, such as leaves and brush trimmings, annually.

"The store has done a lot of education of employees and instituted a lot of signage," Oshins said, adding that additional labor costs have been minimal. "The guys are great; they really like doing this. No one likes to see food go to waste." (Oshins also stressed Wegmans commitment to channel any usable food to hungry hands before discarding it.)

MORE INFORMATION

To find out more about composting grocery store food waste on your farm, go to: www.dep.state.pa.us/dep/deputate/airwaste/wm/recycle/Compost_sum/GP-farm.htm OR contact Cary Oshins at caryoshins@lehighcounty.org.

Occasionally, some material gets into the compost collection that shouldn't be there, but those incidents are few and far between, Oshins said. (And, he said, the farmer has the right to reject any load before it's dumped onto his property.)

"Once it's been collected, then you have to get it from the store to the farm, and that's the most expensive part of the system—by 80 percent—from the store's perspective."

About once a week and at \$200 per load, long roll-off containers specially designed to hold in the materials and smells are hauled off to the farm. "It gets heavy and wet and it starts to stink if it stays around too long, especially in the summer," Oshins said.



The relatively simple permit process involves a one-time \$500 fee, operations and nutrient-management plans, a site sketch (but no engineer's drawings), no bonding process (as is required by the more expensive and complicated solid waste handling permit), and no drainage requirements (the farmer simply prepared a loading pad; ground sawdust works best). The working farm—as legally defined by the state—must also be at least 5 acres in size.

Storing and hauling food waste for compost presents special challenges, not the least of which is containment.

On-farm handling

The freshly delivered compost is covered to contain smells if the farmer can't get it into windrows right away (within a week). To form the windrows, the raw compost material from the grocery store is loaded into a rear-discharge manure spreader and covered with carbon-rich waste mulch. "This encourages a mix," Oshins explained.

It takes about 6 to 8 weeks to make a full windrow, which is about 5 feet high by 10 feet wide "and as long as you have room to make it," Oshins explained. Every two to four weeks, the windrow gets turned with a front-end loader; it's ready for curing and storage at about 12 weeks. The goal is to maintain enough heat in the center of the pile to kill potential pathogens; 131°F by EPA standards. Over the course of the pilot program, Oshins said, the center of a new windrow typically held a temperature of around 160°F while the CO₂ level of the pile was around 18 percent. Those levels, he said, dropped in mature compost to around 136°F-150°F with a CO₂ level of about 3 percent.

Ned Foley of Two Particular Acres farm in Montgomery County was the first to pull an on-farm composting permit from the state. While he eventually plans to take full advantage of the grocery store/farmer partnership, Foley currently uses the roll-off container model predominantly at horse stables, hauling the manure back with his own truck to mix with landscape waste.

Making literally tons more compost than he could ever use on his own farm, Foley began investing in the infrastructure to process it more efficiently for sale off the farm. Not only does the microbial-rich compost vastly improve the shaly and drought-prone soil on his hay and grain farm, but he sells the surplus for \$10 a yard.

"The most fundamental question you have to ask yourself is 'is composting appropriate for our farm?'," offered Foley. "For us it made sense...our organic content was extremely low."

While Foley's operation is not wholly organic, he said his annual fertilizer bill has dropped significantly, from \$5,000 to around \$500. "It just makes economic sense to do this," he said.

One nice thing about the compost business, Foley said, is that it's not nearly as seasonal as his other farm activities. But there is a downside, he said. "It's hard on equipment. You wear things out quite fast; you go through a lot of iron, no doubt about it."

Using a manure spreader allows for a more homogenous mix and a neater appearance—a plus where neighbors are concerned—Foley said, "but if you have a tractor, you can do it with what you already have on hand."

As Foley began to export more compost off the farm, he invested

in a compost turner. "With a turner I can [turn a windrow] in five minutes," he said. "I turn based on temperature; I don't turn that often. In 10 to 12 weeks, based on weather conditions, I may do 6 to 8 turns. With one windrow that doesn't sound like much, but if you have 8 to 10 windrows..."



Foley also invested in a 100-horsepower, 4-wheel drive tractor with a full PTO and a creeper gear that allows him to crawl over the land at half a mile an hour, or about 2,200 rpms. This mammoth machine, he said, does quadruple duty—including loading trucks and turning compost—so that, just like the farmer, it's out there working every day. A small grinder and various screens—which he scoured several counties to find a rental source for—add a further dimension, Foley said, allowing him to offer a diversity of finished products.

A tractor and a front-end loader are all that are necessary to turn a windrow.

Foley cautioned other farmers to go slowly in determining the level of commitment of time and equipment that would best fit their individual operations. A several-day class offered by the Professional Recyclers of Pennsylvania (PROP) was key in getting him started on the right foot, he said. "We learned everything we needed to know about composting, and the cost was next to nothing."

Foley and Gehringer represent two approaches to utilizing the state's new on-farm composting permit. One has made a successful business of selling compost, though he hasn't yet taken full advantage of the opportunity to import compostables from grocers. The other is taking in as much compostable food waste as the grocery store can provide and using every bit of it on-farm.

Oshins offered the following equation: 500 tons of food waste—the maximum allowed by the new permitting process—equals about 800 to 1,000 tons of finished compost (after incorporating the carbon-rich material Lehigh County will bring in free of charge). No matter what you choose to do with it, that's a lot of compost.

The pilot program has worked out many of the kinks in the system, such as finding a hauler willing to retrofit roll-off containers that can hold up to the job. Each container costs the grocer between \$3,500 and \$4,500. James Chrin of Chambers Development Company (the hauler working with the pilot program) recommended at least two such containers for each operation, in order to maximize efficiencies, if the travel distance between farm to store exceeds 15 to 20 miles.

Now that there's a permit in place, Oshins is actively seeking grocers and farmers to match together. "I don't want to approach grocery stores until I know that there are farmers who are willing to work with them," he said. **NF**