COMPOSTING animal residuals has become much easier for Leona Meat Plant in Troy, Pennsylvania since the slaughterhouse purchased some new composting equipment and employed new techniques. The facility began composting eight years ago to cut costs, but recent additions of a grinder and an aerator have not only significantly reduced the time needed to compost the animal wastes, but improved the end product as well.

The federally-inspected facility slaughters, processes and sells beef and pork. It also prepares and packages food products for other companies, private labels and carnival vendors. It does custom processing (cutting, wrapping and freezing) for deer hunters as well as for customers who grow cattle, pigs, buffalo, emus, ostriches and sheep. All meat cutting is done on the premises.

Charles Debach, Sr. opened Leona Meat Plant in Troy, Pennsylvania in 1963 in a two-room building. His sons Chick and Mike helped their father from the start, when they were 10 and 8 years old (respectively). Since 1963, the plant has grown from 1,500 to 10,000 square feet and has 12 employees. A custom meat cutting area was added in 1967 and a retail store in 1972.

Chick and Mike Debach bought the Leona Meat Plant business from their father in 1985. Eight years ago, the Debach sons started composting the animal residuals left over from the butchering process, after a rendering plant began charging a fee to take them. “The renderer used to pick up and pay us for all of the residuals, which they would grind up for animal feed,” says Mike Debach, who was interviewed for this article. After the outbreak of mad cow disease, new laws were passed that prohibited feeding animal by-products to animals.

RUDIMENTARY COMPOSTING START

In November 2001, the Debachs began working with the Pennsylvania Department of Environmental Protection (DEP) to get their composting operation approved. It took about two months. “The agency didn’t know how to classify what we were doing because it was new to them,” explains Mike Debach. “The agency gave us a permit by rule that allows us to compost on site if there are no problems with odors or leachate. All our waste material must be composted on our property, and we can sell 200 tons of compost before we need a different permit.”

Leona Meat Plant began composting all of the animal residuals except for the hides, which still had monetary value. “We didn’t have any composting equipment, so we were just stockpiling everything,” recalls Debach. “We mixed the bones, head, guts and fat together but it made a very wet mixture. The femur bones on a cow are two to four inches in diameter, so composting those bones in the piles took quite a long time.”

An 8- to 10-inch thick layer of wood chips and bark was laid down; animal residuals were placed on top, and covered with more wood chips and bark. “We just kept adding layers and building big piles,” he explains. “We couldn’t get the compost piles to the proper heat, so it took two to three years to produce a viable product.”

NEW EQUIPMENT, NEW METHOD

Two years ago, after some Internet research on composting, the Debachs experimented with some different composting equipment and methods. In March 2007, they purchased a Sundance KID III compact horizontal grinder from Sundance Equipment, LLC. The grinder has a patented horizontal, reciprocating ram feed and a grinding process that does not use screens. “At times, our material has a moisture content that is higher than 70 percent,” says Mike Debach. “When we tried other grinders that had a screen, it plugged up the screen. We don’t have that problem with the Sundance
The windrows are turned the day they are formed and then every three to five days for six weeks. According to Debach, Leona Meat Plant saves $3,000/month by composting instead of paying a renderer to take the animal residuals. “Since we purchased the new composting equipment, we’ve been doing a much better job and have cut the composting time down from two to three years to six to eight weeks. The investment in the equipment was well worth it to get a good end product.”

Blding Sales

In 2003, Chick and Mike Debach started a new business, the All Natural Beef Company, to raise grass-fed beef without growth hormones, antibiotics or chemicals. “We saw a customer base that was asking for something different than our traditional products,” explains Mike Debach. Eighteen head of cattle are currently grazing on 15 acres of pasture next to the meat plant. Most of the compost is being spread on those pastures. “It turned out very well that we have the pastures right here,” he says.

Leona Meat Plant also started selling some of its compost in June 2007. Local residents come to the meat plant in their pick-up trucks to buy the compost for their gardens and flowerbeds, and to plant trees. “A spokesperson for a local fertilizer company told me that it was worth $130/ton, but we are currently selling it for about half that,” says Debach. “Farmers can use the compost on their pastures but the cost of trucking it has been prohibitive. However, if the cost of fuel continues to drop, that may open the door for us to sell more.”

The Debachs plan to start marketing the compost more aggressively. “We’re making a good product now,” observes Debach. “We have the compost tested by a fertilizer company so customers know what they are getting.” He estimates that 200 tons of compost will be produced annually, based on the capacity of the slaughterhouse to produce animal residuals. “We looked at bringing in off-site materials such as food and lawn waste to make more compost but decided that we didn’t want to go through the permitting and monitoring that would be required,” he adds. “It would involve a lot more time and manpower than we have available right now.”

According to Debach, the All Natural Beef Company plans to start using wood waste from local logging companies and saw mills. "The rest we purchase from local logging companies and saw mills." 

The windrows are turned the day they are formed and then every three to five days for six weeks. “We monitor the composting process by the temperatures in the windrows,” says Debach. “In the beginning, the windrows reach temperatures of 130 to 160°F, which generates enough heat to kill seeds and bacteria. The temperatures slowly come down as we keep turning them. When temperatures drop to 90°F, we combine the windrows into a big pile and sell or spread the compost.”

Windrows aren’t turned during the winter. “The windrows are not that big, so it’s hard to get the temperatures high enough in cold weather,” says Debach. Instead, the bones and guts are separated and stockpiled. “We’ll start grinding and composting again in the spring.”

The finished compost doesn’t require screening. “We can grind it pretty fine with the Sundance grinder and the Brown Bear aerator produces a material that is fine enough,” says Debach. Grinding the residuals also has solved an odor problem. “The slaughterhouse is located in a residential area and we have good neighbors,” he adds. “Before, there was an odor when we turned the windrows, but grinding has pretty much eliminated that.”

BUILDING SALES

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Molly Farrell Tucker is a Contributing Editor to BioCycle.