Case Study
Lion Farms

From the ground up: Grinding food waste into worm food

Just beyond Miami's glittering beaches, Peter Fedele manages a very different kind of hotspot: a farm for four million red wiggler worms. Fedele is the founder of Lion Farms, one of the nation's leading regenerative, zero-waste farming operations. "We're probably the largest worm farm in Florida now, maybe one of the largest in the country," Fedele stated.

Those millions of worms produce vermicompost, a highly beneficial soil amendment that is blended and brewed into worm tea, a natural fertilizer rich with microorganisms that break down organic matter, release nutrients, and suppress soil-borne pathogens and pests.

Working with nature rather than against it, plants fertigated with Lion Farms' vermicompost tea yield more fruits, vegetables, and flowers — no chemicals required.

The farm processes up to 800 pounds of vermicompost a week. Red wiggler worms are detritivores, animals that live on decaying matter. Considered the "compost champion" of the animal kingdom, they can consume up to half their body weight in food a day. But, while they may have big appetites, they can't take big bites. With no teeth and nearly microscopic mouths, the worms rely on Fedele and his staff to grind their meals into a slurpable mush.

Problem

Without a way to break down organic materials, Lion Farms' zero-waste model risked slowing to a crawl.

Solution

The 4-SHRED Monster Industrial Shredder breaks down food waste, then Lion Farms' four million worms finish the job.

"To feed them a balanced diet, you need a carbon source and a green source, and carbon sources are usually wood-based and cardboard, so I needed a grinder," explained Fedele. Through research, he discovered JWC Environmental and was won over by the customer service. "The conversations were fantastic and very supportive, it made my life really easy," said Fedele, "I'm a 40-year general contractor, so I've been around the block a couple of times. I know when I'm dealing with real people. It was an easy decision."

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Cutting food waste down to size

Lion Farms purchased the Monster Industrial 4-SHRED waste grinder with the optional torque overload protection. Finding the right teeth for the grinder was key. Worms, Fedele explains, prefer their meals much like we do, broken down into manageable, bite-sized pieces.

Through a series of conversations, the JWC engineers collaborated with Fedele to find the optimal configuration for his needs. “The design of the teeth was very important to me because I needed to get things down to between a quarter and a half inch in size for my worms.” He added, “I wanted something that could handle the small stuff but could also grab a good-sized coconut or whole avocado.”

The engine behind regenerative farming

Lion Farms’ vermicompost tea recipe begins at the grinder. “The grinding is the first part of the whole process,” explained Fedele, “Otherwise, you’d have giant piles of stuff that would never decompose effectively to feed the worms.”

“We grind several times a week,” he said. The dual-shaft, high-torque grinder reduces truckload after truckload of food waste to less than 20% of its original volume. “I’ll throw the entire box in and grind everything up to a perfect consistency,” Fedele said.

The grinder’s torque overload protection system ensures the staff can work safely and efficiently. When torque exceeds 90% of the shaft’s mechanical yield, the shaft decouples from the motor. This feature prevents catastrophic damage to the grinder should something that can’t be ground up, say a pair of pruning shears, be accidentally tossed into the machine. Additionally, a cord wrapped around the hopper serves as an emergency stop; when pulled, regardless of the user’s position, the machine shuts down instantly. Fedele says the feature proved invaluable during the farm’s early months with the equipment. “We load it with a skid steer, so it gets pretty heavy,” he explained. “It’s very comforting to know you can shut it off in a second.”

Once the grinding process is complete, staff clean out the machine and prepare it for the next run. The compost then cures for six to eight weeks before it’s ready to feed the worms and, by extension, fuel the entire Lion Farms operation.

Digging up grub

With more than four million hungry mouths to feed, Fedele says keeping his worms happy is a full-scale operation. The farm’s regenerative, closed-loop design means nothing goes to waste. But it is the pre-composting process that is the real trade secret behind the farm’s success. By breaking down and stabilizing

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Peter Fedele, Lions Farm.

the food waste first, the system prevents undesirable consequences such as bugs or E. coli. “I’m very clear in what I feed my worms, so nothing that could have any potential of hurting them,” Fedele explains. Beyond the waste produced on the farm itself, Fedele has an ever-growing network of local distributors and grocery stores. Whatever doesn’t sell, the farm happily takes off their hands.

“I used to support my worm population easily, but now I have to use outside sources. We’re constantly talking to local food distributors, saying, ‘Hey, anything leftover?’” And what’s on the menu? Whatever organic matter the farm can find that week — whole boxes of expired fruit, pruned branches, and several hundred 10-pound solid blocks of virgin sawdust and grains used to grow the farm’s organic gourmet lion’s mane mushrooms. Luckily, red wigglers aren’t picky eaters. Even so, Fedele is meticulous about keeping his worms healthy, which meant he needed a grinder that wasn’t a picky eater either. Hard fruit seeds like avocado pits, while particularly tough for the worms to break down, are no match for the grinder’s powerful steel cutters.

Food for thought

Striving to create a harmonious balance between nature and technology, the state-of-the-art, 100% organic farm produces nearly a dozen varieties of gourmet mushrooms, subtropical fruit, as well as turmeric, microgreens, organic chicken eggs, aquaponics-raised Nile perch, and New Zealand rabbits. But Lion Farms’ mission goes far beyond its 15 acres.

Roughly one-third of all food produced in the U.S. goes uneaten, wasting valuable resources and accounting for most of what ends up in landfills. They may sit low on the food chain, but worms are essential to the circle of life. By endlessly breaking down and cycling nutrients back into the soil, they perform an invaluable service to the world around them, closing the food cycle and nourishing new growth. This understanding of interconnectedness — and the respect it demands — is the guiding philosophy of Lion Farms.

Fedele says interest in his system is growing. “I have large farming friends interested in composting,” he said. “Even if you’re putting food waste into a compost pile, you need to break things down. I show them my grinder and recommend JWC.”

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