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FOOD WASTE COMPOSTING KEY TO MEETING CHALLENGES OF GROWING POPULATIONS

The statistics surrounding food waste in the United States and Canada can only be described as staggering. More than 30 percent of the food produced for human consumption in the U.S., valued at \$162 billion annually, isn't eaten. Each year, the United States spends \$218 billion growing, processing, transporting and disposing of uneaten food. In Canada, \$31 billion worth of food is thrown out yearly, which is approximately 40 percent of the food produced. Nearly 80 percent of that food waste was once perfectly edible, and 47 percent comes from households.

The fact that so much uneaten food is piling up in landfills is a hot topic among those concerned with the reality of feeding growing populations.

According to the U.S. EPA, in 2010, more than 30 million tons of food scraps ended up in landfills and incinerators. Only four percent of these scraps were recovered through composting efforts.



▲ In Canada, \$31 billion in food is thrown out yearly, approximately 40 percent of the total produced.

Yet food scrap composting is believed to be one of the most sustainable ways of achieving two goals: decreasing the amount of commercial solid, organic matter in landfills, and creating more nutrient-rich soils in which to grow food for expanding global populations.

Efforts to capitalize on composting capabilities include disposal bans, like the one Metro Vancouver, introduced in 2015, requiring residents and businesses to separate organics from garbage for composting. So far, the effort has put a dent in the 250,000 tons of garbage sent to the landfill in Vancouver each year.

Space to grow food is also of increasing concern. At the present growth rate of 1.1 percent per year, the U.S. population will double to about 560 million in the next 60 years. This will further strain food production systems facing drastic decreases of arable land.

Of the nearly 470 million acres of arable land that are now cultivated in the U.S., more than one million acres are lost each year to urbanization, transportation networks and industrial expansion. Approximately two million acres of prime cropland are also lost annually through erosion, salinization and water logging. If present population growth and other trends continue, over the next 60 years, degradation and urbanization will diminish U.S. arable land base from 470 million acres to 350 million acres.

Another concern with respect to growing populations involves the production of phosphorous which is used



▲ JWC Environmental's Monster Industrial grinder is ideal for use with the FOR Solutions in-vessel food waste composting system.

to make fertilizers to assist in crop production.

According to a detailed projection authored recently by two Australian researchers, Steve Mohr and Geoffrey Evans, world phosphate rock production will most likely peak in 2027. Without ample supplies of phosphorus – more than 80 percent of which is produced for use in fertilizers to assist in crop production and results in increased yields of up to 50 percent – it will be increasingly difficult to provide sufficient food for a world population expected to reach 9.5 billion by 2050. Phosphorous is a finite resource and has no viable substitute in agriculture.

ON THE ROAD TO ZERO LANDFILLED FOOD WASTE

“Organic waste” can be defined as food waste, green waste, landscape and pruning waste, nonhazardous wood waste and food-soiled paper waste that is mixed with food waste. Resource recovery efforts specifically targeted at eliminating waste from food scraps are among the innovative solutions currently being used to help achieve sustainability of food production for growing populations. Such is the case in California, where the Jacobs & Cushman San Diego Food Bank (SDFB) – the largest hunger relief organization in San Diego County – put itself on the map by setting a goal of achieving zero landfilled food waste, and acting ahead of a new California law, AB 1826, that requires organizations to recycle all organic waste.

The food bank achieved its goal by partnering with New Jersey-based FOR Solutions, who in turn partnered with California-based JWC Environmental. The results of this three-way partnership are far reaching.

Annually, the SDFB receives more than 23 million pounds of food and serves, on average, 370,000 people per month in San Diego County. Twenty-eight thousand of those helped are low-income military personnel and their dependents.

Due to expiration dates, 500,000 pounds of food received often cannot be distributed and requires disposal. To manage their food waste, the SDFB is using FOR Solution's patented aerobic in-vessel rotary drum composting system. This solution utilizes JWC's 3-SHRED waste grinder which breaks down food scraps to a size necessary for accelerated composting. 2,000 pounds of food waste per day is now recycled and made into nutrient-rich compost for use on local San Diego farms.

According to SDFB, their improved environmental footprint and substantial savings on hauling and tipping fees are among the benefits.

THE FOR-JWC SOLUTION

In-vessel composting systems, capable of processing between 2,500 and 40,000 pounds of discarded uneaten food per week, can be found in many institutional settings such as colleges and universities, correctional facilities and prisons; commercial locations such as hotels and conference centres, cruise ships, amusement parks and sports stadiums; and municipal facilities such as wastewater treatment plants and airports. This is the first time such a system has been installed at a food bank, according to FOR Solutions.

The same can be said for JWC's grinder. Prior to the SDFB installation, FOR Solutions' co-founder and ecologist Nick Smith-Sebasto was conducting due diligence of shredders online and came across the machine ultimately chosen for the application. The initial composting system's prototype used a competitor's grinder, but Smith-Sebasto was intrigued by the features of JWC's Muffin Monster and its reputation in the market. That proven reputation assuaged Smith-Sebasto's concerns over choosing a grinder that wasn't in their original prototype, and he soon found that he made the right decision.

JWC's close proximity to the food bank was an added bonus and proved immediately beneficial. JWC was able to support the start-up commissioning of the composting system and work through initial challenges. A careful assessment of the first run indicated that the shredder's tooth pattern wasn't optimal for the materials being shredded. JWC engineers provided an alternate tooth pattern and reconfigured the cutters to be more effective. According to the company, when dealing with food waste, tailoring grinder systems to address feedstock variations is fairly common.

Smith-Sebasto says he was thrilled with JWC's responsiveness and solution, and that he intends to use JWC Environmental technology in the future.

He adds that the pipeline of sales is unexpected. According to Smith-Sebasto, when he first designed the system, he didn't intend to commercialize it. It was simply something he created as an authentic way to make the world a better place.

Today, the FOR Solutions in-vessel composting system is ideal for managing the food scraps recycling issues many industries face, by turning nutrient-dense food scraps into compost cleanly, efficiently, safely, economically and virtually odour- and pest-free. Food left over at restaurants, schools and other institutions can be efficiently composted and used to grow more food, which will contribute to meeting the challenge of feeding growing global populations with less arable land. Instead of a tomato travelling 1,500 miles before it is eaten, it can be grown locally on fertile soil that is restored with food scrap compost.

FOR Solutions JWC Environmental

Kevin Bates is director of global marketing, for California-based JWC Environmental.