

Vermicomposting Pilot Program Application

Basis for Pilot Project –

[REDACTED] is an organization that believes in “keeping it local.” The basis for doing this project is to, essentially, “complete the loop” in the food waste stream created by [REDACTED]

[REDACTED] is providing locally grown, organic produce to [REDACTED] for the produce section, as well as to the deli. Currently, the kitchen waste is being landfilled, which does not bring any benefits back into the community in Pittsboro. Using vermicomposting, [REDACTED] will take the pre-consumer food waste and create a marketable product (worm castings) that will be available to the customers at [REDACTED] (a.k.a. “completing the loop”). This keeps all products and revenue within the community. The vermicomposting project has educational value. It is, also, intended to be a demonstrative entity for those that do visit the site, showing that it is possible to create a beneficial product out of solid waste.

Persons Involved –

Project Owner: [REDACTED]

Land Owner: [REDACTED]

Operator: [REDACTED]

Organization and Location:

[REDACTED]

Contact:

*Please see Appendix A for aerial photograph of the site location

Waste Stream –

We are targeting the pre-consumer, meat-free and dairy-free food waste, in addition to used coffee grounds, that come from the [REDACTED]. It also will contain waste office paper, restroom paper towels, and meat-free and dairy-free kitchen waste from [REDACTED]. In addition, culled and spent food waste from [REDACTED] will be included.

[REDACTED] produces approximately 20 pounds of food waste per day, or an estimated 3.3 tons of food waste per year. [REDACTED] produces approximately 20 pounds of office paper, waste paper towels, and food waste per week, or 0.5 tons per

year. [REDACTED] has an estimated 30 pounds per week, or 0.71 tons of culled organic produce per year.

We estimate that we will be taking in approximately 175 lbs. per week, eventually building to 1000 lbs per week over the course of the first year.

The Schedule –

It is anticipated that the project will be perpetual. The expected time frame to get usable castings from the project is approximately six weeks. The project (in terms of being a pilot project) will last one year.

Methodology –

We will be using vermicomposting to handle the food and office paper waste during this project.

The food waste from [REDACTED] will be picked up several times per week (as specified by the Health Department) using multiple, securely-lidded, 20 gallon containers. The food waste will be co-mingled at the source [REDACTED]. The food waste containers will be replaced on the spot by clean containers. The soiled containers will be cleaned using soap and hot water at a location on site, with a catchment basin that will allow us to return the water to the worm bin. Once the food waste is on-site, it will be immediately loaded, with additional office paper waste, into a grinder that empties into the worm operation. The ground food and paper waste will be emptied in the worm bin on a daily basis.

The design includes:

A flow-through operation measuring 5' wide by 16' long by 3.5' tall will be used for the vermicomposting project. It will consist of a metal frame lined on all vertical surfaces by fiberglass panels. The bottom will have quarter-inch screening allowing for the periodic harvesting of castings. Initially, we will only use half of the container by placing a divider down the middle of the box as only half of the box is needed to manage the amount of waste being processed. The flow-through operation will be on the ground underneath mesh covered growth tables within a solar greenhouse. Moisture content will be maintained through the addition of excess water produced while watering the plants on the tables. The flow-through operation has 1/4" mesh screening lined with newspaper. Any leachate that does make it through the system will be contained in a catch tray beneath the operation. This leachate will then be returned to the top of the flow-through container. Aeration is provided by the addition of shredded office paper and through worm action. The first harvest will occur approximately six weeks after starting, allowing for an accumulation of the castings. Thereafter, the finished worm castings will be harvested every three weeks.

The greenhouse will be a true solar greenhouse, allowing the sun rays to warm the air. During the cool, winter months the worms will provide additional heat within the solar greenhouse. In addition, we will provide passive solar thermal mass (in the form of black, water-holding containers), with one beneath the worm bin, allowing the heat to radiate upwards into the bin. In extreme temperature fluctuations, when temperatures go below the ideal ambient temperature of 60° F, we will have the option of using propane as a back-up. However, in attempts to keep the project truly "solar" and sustainable, we will not use propane unless completely necessary. Conversely, in the heat of the summer months, the sides of greenhouse will be rolled up to provide air flow-through, in addition a shade cloth will be pulled over the greenhouse to keep temperatures in their ideal range that is suitable for worms.

The finished worm castings will be harvested via a wench system built into the bottom of the flow-through operation, screened and separated from the undigested food and paper waste and the worms. This will be done using a 1/8" tronel worm screener. The undigested materials, worms, and bedding will be separated out and placed back into the top of the operation.

Record Keeping –

Records will be kept of all data, including types and quantity of waste collected, weight of food waste introduced each day, moisture content, pH of the vermicompost beds, weight of shredded paper, and temperature. We will also calculate the quantity of material processed, as well as keep record of the specific types and amounts of waste introduced into the worm bin system. When harvesting, the amount of castings will be recorded. At the time of packaging and distribution of the compost product (worm castings), the amounts and the distributor / reseller / end user will be kept on file. The records of all analytical testing will be kept on file for each batch. These will be logged in a database five days per week.

Testing –

An analysis conducted by a private lab will be used to detect pathogens (fecal coliform) as well as nutrient content. Frequency of pathogen testing will be every batch, which is defined as every three months. The batch will then be sub-sampled and sent for analysis. Initially, a castings harvest will not be conducted until three to six months after the start date, as designated by the first day that food/paper waste is added to the worm bin system. Before sale of castings, the levels of pathogens will comply with standards set by the EPA. Foreign matter testing will be conducted on site at a frequency of twice per year. Additionally, a sample of castings will be sent to the NCDA for a heavy metal analysis at least twice per year.

Product Use –

The final product will meet the standard put forth by the US Dept. of Agriculture and Consumer Service, will be sold at Chatham Marketplace, thereby creating a "closed loop" system. The worm castings will be held on site in 5-gallon containers until approval is received.

End of Project --

A report will be completed and presented to the Department of Waste Management on the results of the project. Included in the report will be amount of waste added during the project in tons (food waste and paper waste), amount of vermicompost produced, amount of vermicompost used (both on site at [REDACTED] and other local customers), all vermicompost analysis data, and the success of the project.