

Measuring the Effects of Garden Composting on Household Waste

Colette Powers
ANTH 204: Archaeology

Introduction

Trash is something that is universal: everyone around the world leaves waste behind. It is for this reason that I wanted to dig deeper into what my family and I are throwing away. Two years ago, we started a garden in our backyard and began composting food waste to help our plants grow, and it was then that I immediately noticed how much of what we discarded could be put back into the environment. It is through garbology and research that I plan to explore the beneficial impact of composting waste that would, otherwise, be put in a landfill. A possibly effective avenue for doing this could be gardening, and during the duration of this project, I intend to investigate if it is viable to promote broadly in the larger community.

Research Question & Background

My project is centered around the concept of garbology, which was introduced in ANTH&204 as the study of a community or culture by analyzing its waste. I hope to use the practices of this discipline to examine ways to reduce the amount of biomass waste that ends up in landfills as well as the steps we can take towards establishing composting infrastructure, as the excess biomass that is disposed of is a legitimate problem that needs to be addressed. Out of all US Municipal Solid Waste (MSW), 70% is biomass (Chandra Thomas 2018). Biomass is defined as organic waste, from animals, plants, or other organisms, and is compostable. The fact that a large percentage of the public's discarded trash is biomass demonstrates a lack of opportunities to reduce waste through composting. One of the most common ways to utilize and encourage composting is through gardening, which requires fertile soil for optimal plant growth. My project addresses the question: How much does having a garden affect what we throw away and what is composted? My hypothesis is that composting for our garden will greatly affect our weekly waste by reducing around 20% of what's thrown away. It is through this question and research that I aim to explore the ways in which gardening embraces compost as a way of reducing waste.

Methods

Materials & Location

The main piece of equipment I used was a Taylor digital scale (5751S) to weigh both my household's trash and compost. The garbage was contained in Kirkland 13-gallon white trash bags while being weighed and the compost was weighed in paper bags that would also be composted. I collected the weight of each week's trash and compost at my house on Tuesday afternoons.

Procedure

Each Tuesday, after making sure all waste from the week was consolidated, I would take each trash bag out of the garbage bin and place it on the scale before recording its weight on a sheet and moving to the next bag. After each one had been weighed, I added up their individual weights (in pounds) to get the total weight of my household's trash.



Amount of Trash and Compost Over Time

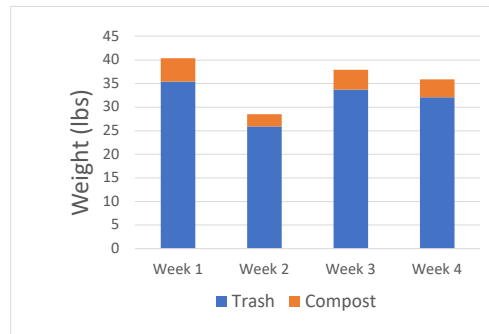


Figure 1. A bar graph depicting the weight of each week's total amount of trash and compost



Figure 2. An image taken during my audit process. I noted many compostable scraps (coffee grounds, lime, paper towels, and eggshells).

Procedure Continued

Compost was weighed all at once after weighing the trash, using the same scale. As for the week 2 trash audit (Figure 2), I looked through the garbage and noted the presence of any compostable scraps that had been wrongly discarded.

Discussion

After weighing the final week's waste and calculating the percentage of trash that was composted, I determined that an average of 12.4% of our garbage ended up being used to fertilize our garden. Although my hypothesis of this number being around 20% was incorrect, being roughly 8% off, it still implies that composting significantly reduces the amount of waste that would be put in a landfill – by over a tenth.

Other studies, like that of Pearl City High School, showed composting for community gardens resulted in, "...34,635 pounds of cafeteria scraps being composted on site over the school year, and a 97.5 percent wasted food diversion rate overall" (EPA 2022). This study demonstrates the benefits of composting biomass as well as the larger community impacts it has. I believe that Pearl City High School had a larger food diversion rate, while my household, as illustrated by the audit's results, demonstrated less diligence in routing their scraps to our compost bin. There were seven people in our household contributing to the collected compost, which made it difficult to track if a person was properly adhering to the protocol. Dr. Zovar's lecture notes draw a similar conclusion from the 2019 WCC Winter Trash Audit, mentioning, "...the remainder [of the campus's audited waste] was made up of food compost (37%)...which should have been composted rather than thrown in the trash" (Zovar 2022).

Although my hypothesis was incorrect, my research still indicates that a significant amount of compost was produced and consumed by the garden from waste that would have otherwise been thrown out. Moving forward, it would be interesting to conduct this research over a longer period to determine whether the amount of compost we collect would steadily increase over time. Despite the need for more data, the research implies that gardening provides a demand for compost which, applied to a larger scale, would greatly drive the reduction of biomass that is currently ending up in landfills.

Acknowledgements

I would like to thank my family for allowing me to analyze our household waste as well as providing support when it came to weighing trash and reporting compostable materials that had been incorrectly thrown away.

References/ Work Cited

- Chandra Thomas, Smita. "Residential Composting." *Energy Shrink*, 9 Dec. 2018.
- Wasted Food by Feeding the Soil and Composting." *EPA*, Environmental Protection Agency, 12 Feb 2022.
- Zovar, Jennifer. "Lecture Notes and Other Resources: Challenging Assumptions in the Past and Present."