

Community Composting in a Solidarity Economy

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Executive Summary

We worked with Growing Hope Urban Farm, a nonprofit located in Ypsilanti, Michigan. Founded in 2003, the 1.4-acre farm has relentlessly worked to strengthen local food systems through engaging and empowering people of all ages to grow their own food. Some of their programs include the Home Vegetable Garden Program, Tool Lending Library, Incubator Kitchen, Teen Leadership Program, and their Community Composting Program. The Community Composting Program has provided individuals from the greater Ypsilanti area the opportunity to contribute to the local circular economy by dropping off food scraps—therefore diverting their food waste from the landfill. Composting has many benefits to the environment, including replacing synthetic fertilizers when applied to crops, reducing landfill emissions, preventing soil erosion, and promoting communities of beneficial soil microbes (Environmental Protection Agency, 2025). The City of Ypsilanti does not offer residential compost pick-up, only drop-off at their site which people must pay for. Therefore, Growing Hope's program is one of the only local avenues for residents to compost. The farm prides itself on never turning people with food scraps away, but demand for compost drop-off is only increasing. With this context in mind, we identified two critical issues: citizens need more resources and education on where and how to compost in their community, and Growing Hope's Community Composting Program will not be sustainable long-term without a system that helps fund its expenses. To address these challenges, we completed the following deliverables:

Educational Materials

Create a Farmer's Guide to Composting, educating other farms on how to begin composting, and how to make it profitable if desired. Additionally, create educational flyers for citizens in apartments, residential homes, and retirement homes to increase individual composting in the community.

Business Model

Analyze the expenses and participant demographics of the Community Composting Program to create a sliding-scale payment system that will allow Growing Hope to break even on their year-to-year program expenses.

In completing these deliverables, we hope to help maintain the long-term stability of the Community Composting Program through reducing the financial burden and ensuring citizens have access to additional composting services.

Reduction in the quantity of food waste ending up in landfills is imperative in combatting the climate crisis. Growing Hope can use the sliding-scale business model to continue composting and reducing emissions for years to come. They are also now equipped with educational

resources to increase citizens' confidence and participation in community composting. Other farms can also look to Growing Hope as an example, with the understanding they can simultaneously engage the community, make money, reduce emissions, and strengthen their local circular economy.

Introduction and Background

Composting is widely recognized as a key strategy in advancing sustainable food systems, reducing greenhouse gas emissions, and improving soil health. Organic waste represents a major portion of the municipal waste stream, yet much of it continues to be sent to landfills. In the United States, the average person generates approximately 2 kg of solid waste per day, and an estimated 18% to 40% of that waste is compostable organic material (Farhidi et al., 2022). When organic waste decomposes anaerobically in landfills, it produces methane, a greenhouse gas significantly more potent than carbon dioxide. By diverting compostable material from landfills and transforming it into nutrient-rich soil amendments, composting contributes to a circular economy that reduces environmental harm.

Research highlights that the use of compost can improve soil structure, increase water retention, and reduce the need for synthetic fertilizers, which are often energy-intensive to produce and can contribute to harmful nutrient runoff (Cathey, 2019). These benefits not only support ecological health but also bolster community food security by improving the quality and resilience of local food production. However, despite these demonstrated advantages, composting at scale is often limited by infrastructure, policy constraints, and community-level resource gaps. Many regions lack accessible industrial or community-based composting systems, making it difficult for individuals and organizations to engage in composting. This gap disproportionately affects under-resourced communities and small urban farms that may rely on compost programs to support sustainable growing practices.

Growing Hope, a non-profit urban farm in Ypsilanti, Michigan, works to build an equitable and sustainable local food system by increasing community access to fresh, nourishing food. Their work centers on empowering community members from marginalized and under-resourced communities to grow, sell, buy, and prepare food with confidence. The organization runs a community farm, youth and teen agricultural education programs, and a composting program.

Currently, Growing Hope is seeking support in strengthening their composting capacity to ensure the long-term sustainability of their program. Our project aims to address this through two main

deliverables. Educational materials on composting for community members and local farms will increase accessibility and alleviate the quantity of material being sent to Growing Hope, and the sliding scale business model allows Growing Hope to be less reliant on securing funding while reducing barriers to community participation in the program. By creating this work through an interdisciplinary lens including environmental studies, sport management, economics, earth science and psychology, the project aims to support a localized and resilient composting strategy that benefits both the organization and the community it serves.

Methods

Educational Materials

Project Planning

We started with the goal of creating educational materials, and from there created various categories of community members who would benefit from having comprehensive guides to composting. These included public schools, restaurants, individual homes, apartments, retirement homes, and farms. We eventually removed public schools and restaurants from our original plan after consulting with our program lead and project partner. We concluded that these projects would not make the impact that we had originally imagined, due to funding constraints and local compost laws. We began with our biggest educational material deliverable, our farmers' guide to composting.

Methods for Farmers Guide

We began by creating an outline for our farmers' pamphlet. This outline included an introduction, a detailed guide to composting processes, legality, profitability, and included a page for references. We spent time researching composting, from the biological processes that make it possible to methods for composting and troubleshooting issues. After synthesizing this information and creating an in-depth guide to composting, we began researching its legality. We looked into national, state-wide, and local composting laws and zoning ordinances. We split the farmers' guide into small-scale and large-scale composting operations, looking into what constituted each and how each needed to be regulated and/or registered. Following this, we did brief research on potential profitable benefits from switching to composting on-site, to add to our already robust guide to the benefits of composting in soil health, water quality, and climate change combating. This had become our major focus for multiple months, especially as the research on the legality of composting on a large scale had taken much more time than originally anticipated.

Methods for Other Educational Materials

After completing our farmers' guide, our attention shifted to our educational materials for individual homes, apartments, and retirement homes. For this, we focused on researching possible methods for at-home composting for those with and without yards. We also looked into the different options for local composting pickup for those who are not in a situation to compost as a result of spatial, time, or other constraints. We compiled a comprehensive overview of what we wanted to include in each of the guides and then worked on designing flyers. We designed the flyers with both online and offline distribution in mind.

Business Model

The creation of the business model can be broken down into five distinct steps. First, gathering participant information; second, setting a goal; third, developing a framework for the prices; fourth, doing the calculations; fifth, creating an editable spreadsheet. We gathered financial information from Growing Hope and then divided their costs into start-up and variable costs (Figures 1, 2, and 3). We also gathered participant information from the composting program. Next we worked with Growing Hope to determine that the model only needed to break even with variable costs to keep participants' prices low. After, an estimation of transactions per year by income level group was created using the calculations for average number of transactions per year and percentage of program participants by income level (Figure 4). Very low income individuals cover 10% of total costs, low income individuals cover 20% of total costs, medium income individuals cover 30% of total costs, and high income individuals cover 40% of total costs. Using this framework, we formulated an equation to create the sliding scale business model. The estimated transactions by income level multiplied by payment amount was set equal to total variable cost, allowing a mathematical solution for price setting. Here is the equation: $33*(X) + 130*(2X) + 292*(3X) + 65*(4X) = 3640$. X is equal to the price of a very low income participant. 2X is low. 3X is medium. 4X is high income. The number before X is the participant is the relative amount of participation in buckets from the respective income level. 3640 is the cost that the model needs to cover.

Deliverables

Educational Materials

Farmers Pamphlet

The goal of our Farmers' Pamphlet was to extend Growing Hopes' impact by providing other local farmers with a comprehensive guide that would serve as a blueprint for getting their own composting programs started. This guide was provided to the project partner as both a PDF and as an editable document so that the Farmers Guide can continue to grow and evolve by other

incoming Graham groups or by our project partners. This ensures that it can be adjusted to changing legal landscapes and added to if community members express that there is a new gap that needs to be addressed. The pamphlet included a comprehensive guide to composting on both large and small scales. It includes a detailed guide to composting processes, legality, and profitability. The biggest part of this deliverable was time spent researching, which totaled multiple months to complete our 14-page comprehensive overview for local farmers.

In-home, Apartment, and Retirement Home Flyers

The goal of our flyers was to give community members across different living conditions the resources to confidently start composting or use city systems to compost. This guide was uploaded to the Growing Hope website, but was also produced in a way that it will be easily printable and physically accessible for members of the community who would benefit from this. The in-home pamphlet guide contained a guide to compost materials and starting compost piles. It is also a guide for keeping food scraps odor-free in-home to be able to collect composting materials. In addition, the apartment guide contained instructions for residents at apartment complexes to follow along with.

Business Model

Growing Hope currently operates their community composting program with a donations based or pay-what-you-can model. Individuals who drop off food scraps are not obligated to pay, which is not sustainable for the program long-term. The program requires time and effort, as well as financial investments. As labor, and material costs rise, Growing Hope was looking for a way to meet their needs, while still being able to provide their services in an accessible way. Therefore, our final deliverable was to create a sliding-scale business model (Figure 5). The sliding scale business model allows for financial flexibility for participants to pay for composting services based on income level while still allowing Growing Hope to retain financial stability.

Our sliding-scale business model is housed in a dynamic, editable google sheet. All costs associated with their composting program, both start-up and variable costs, were factored in here. Additionally, program information like number and frequency of participants was also included. From there, we coded the spreadsheet to do all the calculations needed to create the final four costs for participants (very low, low, medium, and high). Some of these calculations include adding total labor costs, multiplying costs by total items, and computing the sliding-scale equation. Currently, the model only covers Growing Hope's variable costs. This was to keep the financial accessibility for participants low. Variable costs primarily include labor costs and year-to-year tool replacement.

Another part of our deliverable was to ensure this google sheet can serve as an outline for other farms looking to start up their composting program. The sliding-scale business model spreadsheet is based off of Growing Hope's financial information. However, other farms are easily able to change the information in the sheet to update it with their information. What can be changed and what can not be changed are color coded into the spreadsheet. The sheet then will calculate the needed price of bucket drop to cover that farm's cost.

Finally, as part of our business model, we conducted a strengths, weakness, opportunity, threats (SWOT) analysis on Growing Hope's current composting system to provide recommendations for improvements. We recognize that even our very low income level price could be a barrier for someone to pay in that financial bracket. Therefore, our SWOT analysis provides a way to further reduce participant costs in a way that ensures Growing Hope would not feel the lowered costs.

Recommendations

Educational Materials

As mentioned in our deliverables section, our hope for the farmers' pamphlet is that it should be added to and continually evolve. Particularly in the profitability section, where, if we had had more time, we would have liked to expand on this. We also believe that this pamphlet could serve as a template that could be used by environmental stewards in Michigan looking to create comprehensive guides for their specific county, wherein the only section that would have to be altered would be the legality, due to it containing guidelines only for Washtenaw County.

Business Model

The sliding scale business model, paired with the SWOT analysis, provides a set of suggestions that Growing Hope should consider in order to effectively integrate the new model into their current community composting program. The three recommendations we make include contracting out with business organizations, increased advertising, and a change in farmer's market operations. These three items are aimed at reducing the cost on the individual consumer, and lowering potential financial barriers caused by the implementation of the model.

As mentioned above, the model we have created is dynamic. This means that it can be adjusted when the inputs to the supply or demand side of the program change. We have created a blank version of the spreadsheet equipped with the calculations, making it easy for Growing Hope to adjust the model. This spreadsheet can be shared with other farmers interested in creating a composting program similar to the one Growing Hope runs. Not only that, this model allows organizations to increase accessibility for all community members while still covering the basic costs of operation. This framework and spreadsheet we have created could be applicable to pricing other items such as fruits and vegetables.

Impact

The deliverables produced through this project are designed to support Growing Hope's ongoing efforts to build a more equitable and sustainable composting system. By improving access to composting knowledge and resources across different community contexts, the project advances both environmental and community health goals in the short term and lays a foundation for long-term capacity building. Additionally through building a sliding scale composting model, Growing Hope will be able to change at any time their composting model.

Short Term Impacts

Looking at the short term, the majority of this impact will come from the use of the educational materials. The Farmers' Composting Guide provides a comprehensive, step-by-step resource that enables local growers to plan, initiate, or expand composting systems on their farms. This supports local food producers in improving soil quality, reducing reliance on commercial fertilizers, and lowering input costs. The Home, Apartment, and Retirement Community flyers will be immediately actionable practices that community members who didn't understand composting, will be able to see the feasibility of it. These flyers remove key accessibility barriers by providing simple composting instructions, and clear routes for utilizing local compost pickup or drop-off systems. By uploading these materials to Growing Hope's website and preparing them for easy print distribution, the project supports both digital and direct community engagement strategies.

These materials will strengthen Growing Hope's ability to educate new program participants, and support their mission. In the next year, this is expected to improve composting participation at the individual and small organizational level in Ypsilanti, increasing the volume of organic waste diverted from landfills.

Long Term Impacts

Through the creation of the sliding scale composting model, this has the longevity to expand access to composting over time. This model reduces cost as a barrier to participation, ensuring that composting is not limited. For communities like Ypsilanti, this approach promotes inclusivity, enabling broader engagement with sustainability practices. The structure also allows Growing Hope to alter the model whenever they see fit and continue making it more equitable for Ypsilanti community members.

Over the long term, greater participation in composting leads to increased diversion of organic waste from landfills. By bringing more households and small growers into composting systems, a sliding scale model also increases the volume and consistency of compost generated. This, in

turn, supports the capacity of local agriculture by improving soil quality, boosting crop resilience, and reducing reliance on chemical fertilizers. Ultimately, the sliding scale composting model strengthens the long-term viability of community-based composting by aligning environmental goals with economic accessibility. It creates a composting system that is not only environmentally effective but also financially sustainable, and reflective of community values.

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Appendix

Start Up costs			
Item	Quantity	Per Item Cost	Total Cost
Compost Shredder	1	250	250
Tableing Equipment	1	350	350
Drying rack materials	1	100	100
bins for on site collection	4	40	160
Signage	1	50	50
Wheelbarrow	2	50	100
Dolly	1	100	100
Shovels	3	30	90
Hoes	3	15	45
Buckets	100	3.5	350
Total			1595

Figure 1: Growing Hope's community composting program expenses broken down into fixed, start-up costs.

Variable Costs					
Item:	People	Hours	Cost Per Hour	Hours per Year	Cost Per Year
Volunteer Organizing Labor	1	2	20	72	1440
Staff Paid Labor	1	2.5	20	90	1800
Leaf Collection Labor	3	2	20	6	120
Gas	X	X	X	X	180
Replacement Tools (shovels and hoes)	X	X	X	X	60
Material "insurance"	X	X	X	X	40
Total					3640

Figure 2: Growing Hope's community composting program expenses broken down into variable, year-to-year costs.

Start up Cost	1595	
Variable Cost	3640	**our model covers variable cost ONLY
Grand Total cost	5235	

Figure 3: Growing Hope's community composting program total expenses from business model spreadsheet.

Participants				
Income level	Participants per income level	Portion of participants by income level	total buckets (520) x income level	rounded number (for equation)
Very Low income	2	0.0625	32.5	33
Low income	8	0.25	130	130
Medium income	18	0.5625	292.5	293
High income	4	0.125	65	65
Total participants:	32			
Total buckets:	520			

Figure 4: Estimated distribution of transactions by income level groups.



Figure 5: Final sliding scale business model pricing plan.