GVSU Sustainable Agriculture Project: Composting

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Started by just six students back in 2008, the S.A.P. (Sustainable Agricultural Project) has exploded over the years, promoting sustainable food practices. Not only are they cultivating food, the S.A.P. fosters a place for learning, leadership, and community.

Farm Manager - Youssef Darwich
Problem Statement

Currently, the S.A.P. (Sustainable Agricultural Project) has a working composting pile that isn’t reaching its full optimization potential, due to a lack in systems planning. Our group has worked toward analyzing the S.A.P.’s current processes to eliminate the inefficiencies and to maximize the quality of the composting process and product.

This final product will be used to inoculate the S.A.P.’s nursery and planting beds to produce higher quality produce for the community.
Problem Analysis

The Current Problem

- The composting system is underutilized and inefficient

People

Physical Location

System Structuring (chemistry/biology)

Materials

Cost

Legacy of abandoned experiments
Stakeholder Analysis

**Power Holders (Controllers of essential parts)**
- S.A.P.
- GVSU
- Grant Suppliers

**Saboteurs (those who will cause delays)**
- Grant Suppliers
- S.A.P. Crew Members

**Beneficiaries**
- S.A.P.
- GVSU Allendale Campus
- GVSU educational programs

**Early Advocators**
- S.A.P. members
- Student Environmental Coalition
- Beekeepers Club
- Farm Club

**Adversely Affected**
- Nobody
Macro-View

Diagram showing the relationship between various components:

- **Farm System**
  - Sorting Process and material "on deck" structure
  - Compost Pile 1
  - Compost Pile 2
  - Nursery

- **Input**:
  - Water
  - Sun

- **System**:
  - SAP System
  - Drop-off Zone

- **Field**

- **Crops and Product**

Key:
- Input
- Storage
- Production
- Consumption
- System
Composting System

Flow Diagram:
- Composting Process

Key:
- Input
- Storage
- Production
- Consumption
- System

Loss to Environment:
- Heat
- Water
- Gas

Composting System

Compost Pile

Organic Matter
- Minerals
- Micro-organisms

Micro-organisms

Water

Organic Matter
- Minerals
- Micro-organisms
Inputs System

SAP System

- Food Scraps
- Shredded Paper
- Farm organic matter

Storage Buckets
Storage Piles

Drop-off System

- Food Scraps
- Grass Trimmings
- Wood Chips

Storage Buckets
Wheelbarrows

Output = Compostable Material to be sorted
Overall Problems

- Moving the current compost
- Creating the drop off zone
- Getting the funds to make these things happen
- Making sure the systems continue throughout the years
Proposed Solutions

- Change the layout of the pile into long rows
- Build a second compost system that will help maximize the yield of the compost
- Build a large screen to sort out the compost

Image from https://www.instructables.com/id/Compost-Screen/
Preventing the Legacy of Another Failed Composting Project

- Bringing awareness, involvement, and knowledge about the composting project is key to its future success
  - SAP community
  - GV community + beyond

- Incorporate composting workshops for hands-on learning
  - Inspire further involvement
  - Overall understanding of the chemistry/biology that is involved

Inspired by our field trip to Urban Roots:
- Learned to view composting as a craft
  - Integration of chemistry and biology
  - Following or creating your own recipe
- Volunteering ourselves sparked this interest
Further Recommendations

- Move the compost to a different location
  - Maximize input and output
  - Close to drop-off zone

- Purchase or get a skid steer

- Hire a full time composting manager

- Focus on bringing an overall awareness/involvement to the composting project
  - Composting workshops!

- Incorporate research and intention into what is being put into the pile
  - *The Rodale Book of Composting*
Funding

- We have applied for funding from the Sustainable Reinvestment Fund
- We are asking for $400 for supplies

Image from https://conscious-compost.com/designing-and-building-small-scale-asp-systems/
Supply Requests

- PVC Glue
- PVC Adaptors
- PVC Cap
- PVC Pipe
- 2 X 4 Wood
- Plywood
- Screws
- Leaf Blower
- Compost Thermometer
- Taxes
- Unknown Expenses
Next Steps

● Wait for the results of our application for supply funds

● A transition plan for the project - SAP Intern Nick

● Make Aerated Static Pile

● Create potential job position of compost manager
  ○ Integrate more awareness and involvement with the composting project

● Monitor flow of compost materials, and adjust flow diagram as necessary.
Contact Information / Questions?

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