
Food Waste & Management

Team:

Jessica Giannoni

Simran Srivastava

Lucas Slavicek



Outline

- Background Information
- Life Cycle Assessment
- Cost Benefit Analysis
- Drawing Conclusions/Summary

Background Information

- About $\frac{1}{3}$ of food produced worldwide is wasted
- Many people going hungry on a daily basis
- More efficient waste management is necessary
- College universities generate 22 million pounds of food waste annually
- The University of Illinois taking action
 - iCAP initiatives
 - Better understanding the food waste process

Life Cycle Assessment

Raw Materials



Manufacturing
& distribution



Construction



Use &
maintenance



Recycling &
Waste
management

Inputs to
production:
Soil, fertilizer,
seeds,
manpower etc.



Harvesting,
weighing,
selling,
transporting to
grocery
stores/markets



Selling time in
grocery stores
before
expiration



Transportation
from grocery
store to
consumer
home or
restaurant



Transportation
to landfill or
waste facility,
other disposal
methods



Life cycle of a tomato plant in the SSF

- Assumptions:

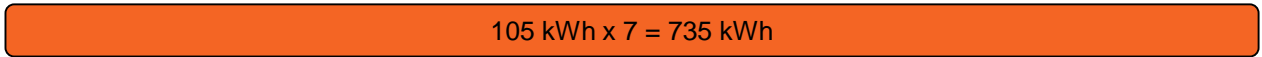
- 5 acres of production space
- 5000 tomato plants per acre
- 10-15 pounds of tomatoes from each plant
- A tomato truck holds around 50,000 pounds of tomatoes

Life Cycle Assessment

To transport to FSHN kitchen & to dining halls:



To make sauce:



To transport to waste facility:





Cost-Benefit Analysis

- **Convenience vs. Cost**
- Consumer focused
- Potential Solutions
- **Landfill vs. Alternatives**
- Landfill
- EnviroPure
- Student Sustainable Farm
- Food Pantries
- LeanPath

Convenience vs Cost

Student body

“Eye is bigger than stomach”

Buffet Style



“May as well get my money’s worth”



Solution #1

Offer recommended serving size

Benefits:

Easy to visualize

Eliminate food waste

Student health by consuming less

Costs:

Will not adhere/follow

Hard to enforce

Convenience vs Cost

Solution #2 “Lunch Lady Style”

Benefits:

Reducing waste
Portion control

Costs:

Increase in staff
Peak rush=long lines
Multiple trips



Solution #3 One Plate Only

Benefits:

Fewer dishes
Less water used
Less dish soap
Reducing waste
Gets students thinking

Costs:

Produces waste
Deter Students



Landfill vs Alternative Disposals

Landfill

Benefits:

- Time efficiency
- Quick/easy one time pickup
- Jobs

Costs:

- Limited space
- Leaching contaminants
- Methane production
- Decrease efficiency of incinerators
- Transportation costs



ENVIROPURE
SYSTEMS A T&S COMPANY



Landfill vs Alternative Disposals

EnviroPure

Costs:

- Unit=\$20,000- \$50,000
- Treatment of greywater
- Electricity
- Water to flush

Benefits:

- Pays for itself
 - Freshwater
 - Self contained, continual feed, low maintenance, no odor, no sludge build up, no clean outs, etc.
-



Landfill vs Alternative Disposals

Student Sustainable Farm

Costs:

- Transportation
- Purchasing compost bins
- Personnel to maintain

Benefits:

- Locally grown
- Decrease need for fertilizers, water, pesticides
- Increases crop yield
- Revitalizes poor soil
- Decreases methane/ leachate from landfills

Landfill Disposal of Food Waste		Composting Method	
Costs	Benefit	Costs	Benefits
Collection fee: \$6,114.08 in food waste collection fees/year	Jobs and revenue	Containers: \$975 Personnel: \$1,185 for three people	CO2 footprint reduction: \$161 per metric ton/year
	Little time to do	Tipping/Mixing area: \$10,500	
Incineration externalities		Temp Probe/guard: \$231.10	\$6,114.08 saved in waste hauling fees/year
	Little equipment needed	Gas for Bobcat: \$600/yr Labor: \$562.50/yr	Educational opportunities Reduced need of fertilizers

Landfill vs Alternative Disposals



Food Pantries

Costs:

- Transportation

Benefits:

- Post and Pre consumer food
- Combating hunger
- Decreasing waste
- Reducing methane

LeanPath

Costs:

- Equipment

Benefits:

- Pre-consumer food
- Less pans/dishes
- Cutting down food costs
- Reducing greenhouse gas



Drawing Conclusions/Summary

- The LCA demonstrated that more goes into the food we consume than we think
- Our CBA identified tradeoffs associated with transitioning away from the traditional
- Consider the alternatives...
- University of Illinois' role

-
- Final Thought

Literature Cited

Aircycle Corporation. 2017. EnviroPure. <http://www.aircycle.com/EnviroPure/>. Date accessed: March 2017.

Beattie, Alicia (2014) "Cost-Benefit Analysis of Food-Waste Composting Program at UMM," Scholarly Horizons: University of Minnesota, Morris Undergraduate Journal: Vol. 1: Iss.1, Article 1.

Dickinson, A., Kim, J., Nabar, Y., Nickel, C., and Plotch, C. 2014. Reducing Food Waste at the University of Pennsylvania: Proposal for an Institutionalized Food Recovery Program. <http://www.ling.upenn.edu/courses/ling005/ReducingFoodWaste.pdf> . Date accessed: March 2017.

Environmental Protection Agency (EPA). 2017. Basic Information about Landfill Gas. <https://www.epa.gov/lmop/basic-information-about-landfill-gas>. Date accessed: April 2017.

Foodtank. 2017. Universities Leading the Charge on Food Waste. <https://foodtank.com/news/2015/10/universities-leading-the-charge-on-food-waste/>. Date accessed: May 2017.

Illinois Sustainable Technology Center (ISTC). 2015. Zero Waste Illinois. <http://www.istc.illinois.edu/0Waste1pager.pdf>. Date accessed: March 2017.

Institute for Sustainability, Energy, and Environment (ISEE). 2017. Reduce Food Waste: iCAP Portal. <https://icap.sustainability.illinois.edu/project/reduce-foodwaste>. Date accessed: February 2017.

LeanPath. 2014. Preventing Food Waste Across the University of Illinois. https://eatatstate.com/sites/default/files/pdf/UofI_and_LeanPath.pdf. Date accessed April 2017.

University Housing. 2017. Sustainability in Dining. <http://housing.illinois.edu/dining/about-dining/sustainability>. Date accessed: March 2017.

Waste 360. 2016. EnviroPure System helps University of Illinois Reduced Food Waste. <http://www.waste360.com/food-waste/EnviroPure-systems-helps-university-illinois-reduce-food-waste>. Date accessed: April 2017.
