

Waste Watchers

Action Research Team 2012

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Section1: Executive Summary

“Waste Watchers at UCLA” is an extensive pilot project that worked to develop an active, student-run waste composting program at UCLA. In January 2012, The Green Initiative Fund (UCLA) awarded our team a \$20,000 grant to carry out this mission. After developing working relationships with various stakeholders, groups and departments in the campus community, we organized a network of composting participants with whom we facilitate food waste pick up. Over the past 10 weeks we’ve collected and transported food-waste using our electric-assist/pedal-powered "rickshaw cargo pedicabs" and delivered it to a new high-efficiency compost facility we built as part of an expanded Victory Garden at Sunset Canyon Recreation Center. Here, the food waste is weighed, sorted and loaded into bins where it will break down into soil fertilizer. The compost will ultimately be allocated to the Victory Garden, used in repurposed

potted plants or “Trash Plants,” and integrated with other campus gardens and potentially broader landscapes at UCLA. This system has the ability to serve as an educational tool by teaching students how and what to compost as well as to create a higher level of sustainability here on campus.

UCLA already implements pre-consumer food waste diversion so that waste from dining hall preparation is separated and trucked away with green/yard waste for composting. However, a great amount of compostable items go into the landfill anyway when people discard them. The objective of our project was to begin composting post-consumer food waste on campus. We sought to place compost bins along various campus eateries. Another objective of our project was to increase student awareness of composting and its benefits. A lot of students are unaware of composting and without this knowledge they are unable to compost properly or be compelled to compost at all. We’ve done this by creating “trash plants” and handmade recycled seed paper to spread the word of our efforts. The project is significant to our study body as it increases knowledge of waste composting and its many benefits. Also, our project will help UCLA reach its goal of Zero Waste by 2020. Without composting this goal can not be reached since much of the waste generated is organic and can’t be recycled.

Section 2: Overview of Goals

During winter quarter our project evolved largely and because of the frequent changes, our team learned a lot as we overcame the various hurdles. Our original hope was to start our post-consumer pilot project at Lu Valle Commons, the dining center for northeast campus. Our team's research suggested this would be a good location to pilot composting for post-consumer waste, as many of the plates, cups, and to-go containers are compostable. ASUCLA pays a significantly higher amount to use these items over traditional paper and plastic ware, but the items still wind up in the landfill, causing only a marginal increase in environmental benefits. Through this pilot we planned to see

how students responded to the compost bins and if people were actively sorting their waste. Unfortunately this pilot idea was not passed by the ASUCLA USAC Facilities Commission. We were momentarily discouraged by this but quickly revived when a team from Graduate Leaders in Sustainability expressed interest in composting kitchen scraps from the Weyburn Terrace graduate apartments. To date, we've collected and composted over 200 pounds of food waste from their team's pilot.

At the kickoff of our team's founding , we chose to apply for \$20,000 from The Green Initiative Fund (TGIF) and were awarded our full request. With the support of the TGIF grant committee, we were given the flexibility resources to execute our program in a comprehensive and impactful way. We spent the first several weeks developing composting programs for various entities on campus and although we ultimately did not include all of them in our pilot, we built a strong platform that's growing rapidly. Early into our project, we began utilizing an internal organizational tool called 411 UCLA. Within this online program we created a database of individuals and organizations we'd be working with and a catalogue of all our email communications with our team and members of the campus community. At the conclusion of this Action Research Team, we have a full archive of all notes, emails, and communication which will be opened and freely available for reference by future Action Research Teams.

Within a few weeks of starting our pilot, our team had secured the Victory Garden as our composting site and pledged to develop the composting system in collaboration with the E3 team working to expand the garden located on the upper level of Sunset Canyon Recreation Center. The compost modules are an important integration with the garden, as they provide a constant supply of nutrients, eliminating the need to purchase and haul-in fertilizer from elsewhere. It also allows the efficient composting of garden waste like dead/spent plants and yard waste from the lawns and trees of SCRC.

Now that we had developed an organized network, we were able to develop the logistics of picking up food-waste from our partners. Our longest standing contributor of food-waste has been a team of graduate students who

live in Weyburn Terrace. Spearheading that team is Chloe Green, of whom we meet every Wednesday for the past six weeks to pick up the food-waste from 16 participating graduate apartments in the Weyburn Terrace complex.

Recently the Institute of the Environment agreed to start composting food waste from the kitchen in their office. We purchased a special food waste bin that is placed next to their garbage and recycling bins. We also receive paper waste from their office, using it as a source of carbon for the composting process. We're looking to expand this concept to other offices on campus, allowing more departments to add composting and enhanced recycling abilities to their staff kitchens. We would pick up these materials on our regular rickshaw rides, or "Waste Watch."

In addition to the IoES, we also established a relationship with the café Il Tramezzino in the Anderson School of Management. The owner has (with great enthusiasm) agreed to separate his kitchen's food waste (approximately 100 pounds a day) and spent coffee/espresso grounds (up to 50 pounds a day) for us to pick up on our rickshaw route 3-4 times per week. We will transport this waste to SCRC where it will add to the mix of compost, creating the ideal nutrient mixture.

As the Waste Watchers initiative continues into the summer, we look ahead to our newest element of the program, that is sales of our compost fertilizer and creative "Trash Plants" to patrons of the Westwood, Mar Vista, and Santa Monica Farmers' Markets. These sales will provide revenue for the program, which will aid in hiring UCLA student workers to run our daily, sustainable rickshaw-powered waste pickup service. In the fall, we will seek registration as an official campus organization and run our club as a full-fledged, green student business. The future is bright indeed.

Section 3: Significance and Background

As per UCLA's campus wide goal of reaching zero waste by 2020, our efforts of waste diversion speak to the core of this vision. Not only have we already diverted several hundred pounds of UCLA food-waste from landfills, but we are doing so in a completely visible way. In light of the fact that we are based in an educational institution, we believe that sharing our process is fundamental to achieving a sustained change. As our program continues, we will use social media to publish our data and results. We plan to post a twitter feed every day of the weight and volume of waste we capture, and use Facebook to share photos and stories while hearing feedback from our community.

We also expect to raise a great deal of awareness not just for composting, but for sustainability as a whole every time we ride the rickshaws through campus. These bikes already turn heads, and we sense they will build a sense of pride. Our repurposed trash planters teach the public about how they can grow food in their own home and that it's more sustainable to grow their own food than to buy imported produce, which would require the use of fossil fuels to be harvested and delivered. In addition, composting the food waste generated by the community is more sustainable than transporting the same food waste hundreds of miles away to a commercial facility, such as Athens Facility. Although it is always good to compost, the less the food waste has to travel, the better it is for the environment as less pollution is created in the transportation alone. By generating our own compost bins and piles, we know what is going in and thus we know the quality of the product that results. Using this compost to provide nutrients to the garden and hopefully to the rest of campus landscaping one day, we decrease the use of commercial fertilizers that contain nitrogen and other ingredients that harm the environment.

Toward the UC's systemwide goal of Zero Waste by 2020, we're excited to add UCLA's contribution to a growing network of composting efforts by other

campuses. UC Davis has set the standard, having already established campus-wide composting and using bicycle trailers to transport much of this waste. UC Santa Barbara began their compost pilot this year with TGIF fund roughly at the same time we started, and we're excited to be working side by side. UC Santa Cruz also has a great program underway, and two of our team members visited UCSC for the Real Food Challenge in March. There we met students from UC Riverside who are also building a composting/gardening program at home. As these new student initiatives build progress, the unison of goals will enable the sharing of information and best practices. We expect to see a great movement of collaboration as a result of these simultaneous projects.

Section 4: Initial Conditions

Our team started with a very broad topic since our title was the Waste and Recycling Action Research Team. Many different factors are involved in these categories. The Recycling Action Research Team of previous years focused on improving the signage of the waste receptacles on campus. The reports of previous teams provided data on how successful their projects were and the campus community's overall reception to improving sustainability. Though the current signage on the waste and recycling bins on campus are not very clear, we decided to look into other approaches that would help UCLA reduce its waste and reach its goal of zero waste by 2020. Our team decided to go in a different direction and ultimately decided that we would start a post-consumer composting system to help reduce waste on campus. We did not have many building blocks going off this topic, since it is the first time a Waste and Recycling Action Research Team focused on composting. Our decision to focus on composting was the beginning for the development of our project idea.

Once our team agreed to focus on composting, we began to brainstorm ideas, which became the inception of the idea to use rickshaws to transport the compost from campus up to Sunset Canyon Recreation Center. Sunset Canyon Recreation Center and the Economy, Equity, and Ecology club's Victory Garden became our composting site and the main site for our composting pilot. We also needed to collect many materials as we were one of the first groups to do composting on such a larger scale. We had the support of the community and the Recreation department who provided support to expand the garden and a site to eventually house the rickshaws. We began to collaborate with the graduate students at Weyburn who were interested in collecting and donating their food waste. Our stakeholder Nurit Katz was also essential to building up our project. She has been so supportive since the very beginning and was a strong advocate for us in being awarded a \$20,000 TGIF grant for our project and approval for the changes that we wanted to make to our composting site. Beyond that she has

been there to support us at many events, including our project debut at the Earth Day Fair.

Section 5: Research Methodology

We have gained much of our composting knowledge through various sources. During the 4th week of our project our team had the assignments of researching 3-4 different composting methods, deciding on which they felt would be most appropriate for our program, and posting the results on our 411 UCLA database. We also researched food-waste receptacle designs, composting bin features and effective signage. We surveyed our surrounding environment to locate appropriate carbon sources such as leaf debris, brush, and which to-go wear is able to breakdown using our methods. We briefly worked with master composter Norma Bonilla to see how we could best utilize the natural resources in our immediate surroundings to create an effective system. She suggested that we speak with facilities to have them give us the brown yard-waste that is typically shipped off to Athens Waste Facility. This way we could not only use the most local natural resources but we could help divert this waste from being trucked to a far off composting facility.

During the Earth Day Fair our team had a display table where we gave out small plants and informed students about our project. We also had students take a survey about composting knowledge. Questions on the brief survey asked students if they knew what composting was, if they knew what items were compostable, and if they would be interested in helping to establish composting on the UCLA campus. Our results were very positive. Most students could define compost, knew what was compostable, and about half were interested in actively helping to start composting on campus.

In order to discern how successful the composting is that is currently taking place on the hill, we conducted a series of observations. We went to the restaurant Rendezvous and watched how students threw their waste away. The restaurant offers a main trash can that is for all compost and then a small recycle bin on the side. There is signage on top of the compost receptacles that clearly

show that lids and straws are not compostable. The sign then shows that they should be removed from drink cups and recycled. We did our observations during lunch time from 11:30am- 1:30pm on two separate Fridays. The first day we observed 49 students. Out of the 49 students 35 students composted properly and 14 did not. However, most of these students composted properly because all of their waste was compostable and did not require active sorting. When students had to actually sort their waste in order to compost properly only 3 students so. Most students did not pay attention to the signage but luckily most waste at Rendezvous is all compostable, so students wind up composting anyways. The second Friday, numbers were roughly the same. Out of 50 students, 16 did not compost or recycle properly. 34 students did compost properly. Only five students took the time to actively sort their trash. This involved removing the lid and straw from their cup to recycle them.

Results for Rendezvous Observations:

Date Observe	5/18/12	5/25/12
Composted Properly	35	34
Composted Improperly	14	16

We also did similar observations at Il Tramezzino, the eatery located in the Anderson School of Management. Il Tramezzino has three composting bins. One which stands alone, one which sits between a trash and recycle bin, and one that is next to a recycle bin. We did our observations on a Friday afternoon from 12pm-2pm. During these two hours we watched 20 people throw their waste away. Of the 20 people, 2 people actively put their food waste in the compost bin and sorted their trash properly. 18 people did not, many of which threw their trash in the compost bin that was standing alone.

Results from Il Tramezzino Observations:

Date Observed	6/1/12
Composted Properly	2
Composted Improperly	18

From this research we concluded that when a composting program is initiated, it must be aligned with an effective educational awareness campaign. This will allow students to be engaged and informed as to the importance of composting, and how to participate correctly.

Section 6: Data Analysis

Week	Date	Weight (lbs)	Source	Weekly Total (lbs)	Total (lbs)
14	4/25/12	65	Team	65	65
15	4/30/12	50	Weyburn		
15	4/30/12	45	Team		
15	4/30/12	75	Team	170	235
16	5/7/12	55	Weyburn		
16	5/7/12	50	Facilities		
16	5/9/12	85	Team	190	425
17	5/14/12	100	Team		
17	5/16/12	33	Weyburn	133	558
18	5/21/12	45	Weyburn		
18	5/21/12	25	Team		
18	5/21/12	84	ORL event	154	712
19	5/29/12	15	IoES		
19	5/30/12	100	Il Tram		
19	5/30/12	100	Facilities		
19	5/30/12	40	Weyburn	255	967
20	6/7/12	25	ART Presentations		
20	6/11/12	15	Team		
20	12-Jun	85	Team	125	1092

The above graph breaks down our organic total waste collections for the entire duration of this project. We began our actual waste pick-up program in week 14 with a total of 65 pounds and throughout our project we averaged over 155 lbs of food-waste weekly leading us to our total of 1,092 lbs of organic waste collected.

We spent the first 13 weeks of our project developing our relationships with various members of the campus community whom we later facilitated waste pick-up for as well as researched composting methods, bin design, and other features of which we later utilized in our functioning operation. We collected 223 lbs of food-waste from the Weyburn Graduate Student Team through weeks 5 and 9 of Spring quarter. We collected 84 pounds of post-consumer food waste

from the ORL “year-end celebration” on May 21, 2012, that would have otherwise wound up in garbage bins and ultimately a Southern California landfill had our team not been there coincidentally for our weekly meeting, or if we had not sprung into action! Il Tramezzino, located in the Anderson School of Management has donated 100 lbs of kitchen scraps and coffee/espresso grounds and are extremely enthusiastic to continue to work with us.

Section 7: Key Findings

Through our observations at the restaurants Rendezvous and Il Tramezzino we came to several conclusions. We found at both restaurants that very few people are willing to take the time to sort their waste. At Rendezvous the signage clearly explains what is compostable and recyclable and what is not. Yet students did not sort their trash and some even looked at the signs and still sorted improperly. At Il Tramezzino we noticed that the same amount of people actually composted properly as at Rendezvous and there is minimal signage. Also the compost bin that stands alone is ineffective since people assume it is a trashcan. A compost bin needs to always be accompanied by a recycle bin and trash can. The conclusion of this research is such that students and graduate students alike are not accustomed to composting. Because there is no way to hold students accountable for how they sort their waste, composting must be extremely accessible, well-labeled, and possibly even demonstrated in order for it to be adopted by the mass population.

We also learned through conversations with people who stopped by the garden or who saw us tabling at the different events that there are many people interested in having a compost site on campus. Although not everyone was willing to help at the compost site, most are excited about the campus becoming more sustainable and disposing of food waste somewhere besides the trash. Many people wondered why UCLA currently doesn't have bins to dispose compost in. We think that people simply need to be educated about the importance of proper sorting and eventually it will become habit for everyone to

sort their trash. We realize that signage is not effectively educating people about composting, as many do not even look at it.

Through these past 2 quarters, our team has realized that it takes a lot of time and effort to get such a pilot successfully going and communication is important through it all. The team progresses faster and more efficiently when everyone is on the same page and this is where 411UCLA became handy. We were able to share our research with each other without having to flood our email inboxes and allowing emails to get lost through it all. Our project has also taught us that, through all of the bureaucracy that exists at such a large research university, there are people willing to help. There are many people willing to collaborate such as the Weyburn Graduate students and Il Tramezzino. There is still a lot of work to do be done, but with time and hard work everything is falling into place and running smoothly.

Section 8: Recommendations

Our team does hope that next year's Waste and Recycling Team will continue with our project. A major part of the project will consistently be education and awareness. If composting is ever to become completely successful on campus, it needs to be supported by the student body. Students will not support something they don't know the importance of. Therefore next year's team should continue to work on educating UCLA students about composting and why it is significant.

Our project is already very structured overall, but a few changes can be made in the future. The follow-up team should consider directly presenting to the ASUCLA Student Board of Directors if possible. That way they can clearly present why it is important to try out a composting pilot on campus. From this pilot further research can be done to see how much waste is diverted from the landfills and also how great student awareness is. Our stakeholders should also be involved in trying to start a composting pilot at a major campus eatery. They could help by promoting composting efforts among co-workers. It would be a good idea to try to implement composting in office building and staff offices as well, which our stakeholders could be a big part of.

Lastly, continued promotion and outreach will help the compost community grow. With more people involved, the workload can be spread out

and the composting site can continue to flourish and grow. Support and momentum are key to this continued success of this project, as without this, it will simply fade out and be forgotten. Collaborating with more student groups and campus departments would definitely help the composting site in its growth and operation.

Section 9: Conclusion

After two quarters and 20 weeks of hard work together, the Waste and Recycling Action Research Team has successfully built two compost bins out of repurposed materials, collected over 450 pounds of food waste, and collaborated with Weyburn Graduate Students, Cafe Il Tramezzino, and the Institute of the Environment. Our team has successfully begun a composting pilot on campus making UCLA more sustainable and one step closer to reaching its goal of zero waste by 2020. We have built up a database, 411UCLA, to help with our planning, communication, and sharing required on such a team project. Throughout the two quarters, our team received a \$20,000 grant to get the pilot up and running, ordered two fully functional electric powered rickshaws to assist in the transport of food waste from Il Tramezzino and Weyburn Graduate housing. We have made numerous connections with interested students, faculty, and staff to help the continued growth of the compost site. Devon, owner of Il Tramezzino, has offered to help with the irrigation system at the Victory Garden. The Waste Watchers have also made appearances at the Sustainable Food Panel, the UCLA Earth Day Fair, and the UCLA Farmer's Market.

There is still much that has yet to be accomplished, but the ball is definitely rolling and the Waste Watchers are making great strides to continue to

grow our compost pile and increase campus presence and participation. We hope that all students and faculty will learn the importance of composting and its role in becoming more sustainable on a personal and campus level. We would like to build several more composting piles and harvest our current compost for use in the Victory Garden and eventually, one day, replace fertilizers used in campus landscaping. We would also like the Waste Watcher network to grow and begin picking up food waste from campus eateries and receptacles. The UCLA community though must first be educated on how to reduce their waste and if they have waste, how to properly dispose of it. Education is key for success in making the community more sustainable, as it starts with knowledge before the students and faculty will change their daily habits.

Section 10: References

- Chloe Green, Weyburn Compost Graduate Team Leader
- Devon Jackson-Kali, Owner at Il Tramezzino Café
- Phillip O'Neil, Anaerobic Digester Consultant
- Norma Bonilla, Master Composter Consultant

Section 11: Sources

- Andrew, Ian. "Pepsi Launches Compostable and Recyclable Cups." *Greener Ideas*. 18 May 2011: n. page. Web. 12 Jun. 2012. <<http://www.greenerideal.com/lifestyle/home-and-garden/8846-pepsi-launches-compostable-and-recyclable-cups/>>.
- Schlesinger, William. *Biogeochemistry: An Analysis of Global Change*. 2. San Diego: Academic Press, 1997. Print.
- Knowles, Simon. "The Design and Theory of a Basic Anaerobic Digester." . N.p., n.d. Web. 12 Jun 2012. <<http://www.adelaide.edu.au/biogas/resources/skproj.pdf>>.

Section 12: Appendix

Please refer to the attached files entitled for additional relevant documents.