

Composting of organic waste in academic buildings on UGA campus: Pilot project in Warnell School of Forestry & Natural Resources and Odum School of Ecology

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Project Overview

In an effort to reduce the quantity, by volume and mass, of solid waste produced by the University of Georgia (UGA), Aaron Joslin, Holly Campbell and Greg Skupien sought to implement a pilot program in the Warnell School of Forestry & Natural Resources (WSFNR) and the Odum School of Ecology (OSE) to collect organic, compostable waste from collective areas, like coffee lounges, and from offices willing to participate. We placed compost receptacles in four (4) lounge areas in WSNFR and two (2) in OSE, as well as in eleven (11) participating lab offices. The compost receptacles were gathered and delivered to the UGArden composting bins on S. Milledge Avenue using the WSNFR departmental vehicle 10 times during the Spring Semester of 2013. As part of this project, we planned, advertised and conducted two separate compost workshops for UGA students, faculty and the public at large. The first took place at the UGArden classroom facility on S. Milledge Ave., and the second took place in the Frank Miller Plant Sciences Building on UGA campus in Athens.

We were very pleased at the enthusiastic reception for our project and the willingness of faculty and graduate students to host compost buckets in their labs and offices. This project elaborated on the pilot program established in the Building 4 coffee lounge of WSNFR, where coffee grounds and filters, and other organic wastes, have been collected in a 5-gallon bucket with a lid and taken to compost since 2011. Students, faculty and staff have continued to show enthusiasm for composting and bring items from their offices to the compost receiving buckets in other locations.

To facilitate access to compost areas and to promote the project in general, we designed and printed flyers to advise Warnell and Odum students, faculty and staff of the project prior to initiation and then made laminated signs that were displayed on the doors of each of the offices and lounges where compost buckets were located. In all, fifteen (15) compost receiving locations were deployed with 5-gallon buckets and collected roughly once per week and then taken to UGArden for composting for the duration of the project, totaling ten (10) compost collections and deliveries (see “Metrics” for more information).

Composting of organic wastes on UGA campus will help UGA achieve several goals related to sustainability and environmental stewardship. First it helps reduce the amount of waste UGA generates for disposal in landfill. By reducing the waste delivered to the landfill, UGA will also save money since tipping fees cost UGA roughly \$35 per ton. Organic wastes from dining halls and landscaping are probably the single largest sources of compostable materials that UGA generates, but academic buildings are also a source of organic wastes that can and should be composted. Secondly, UGA composts these wastes and can utilize them in mulch for campus landscaping works rather than purchasing them from outside vendors. Thirdly, by composting these wastes UGA can prevent them from decomposing anaerobically in the landfill, where they produce methane gas (CH₄), a greenhouse gas 20-25 times more powerful than CO₂, which is produced as organic wastes decompose aerobically, such as mulch material does (see “Metrics” for more information).

Compost was gathered from February 15 to May 9, 2013. Compost collections were stopped at this time because all three co-authors had to leave Athens for the summer to conduct field research. Ten (10) separate collections and deliveries were made during these ~13 weeks. A total of 522 (± 12.4) pounds of organic wastes were recovered and delivered to UGArden for composting, an average of 52.2 pounds per collection, or 44 pounds per week. On an annualized basis, in which there are approximately 45 weeks of full activity in academic buildings while the remaining 7 weeks have much reduced activity, we estimate that our project would collect 2,000 pounds of compostable organic waste. This represents a direct savings of \$35 in tipping costs, as well as indirect savings of \$250 from avoided mulch purchases. Although greenhouse gas emissions do not currently have a cost associated with them, we feel it is important to note that 2,000 pounds of organic wastes would generate roughly 3,700 lbs of CO₂ gas if left to decompose as compost. If landfilled, this same amount of organic waste would generate approximately 130 lbs of methane gas (CH₄), in addition to over 2,200 pounds of CO₂ for a total equivalent warming power of over 4,960 pounds of CO₂. Composting can help UGA reduce its Carbon Footprint by 25% with regards to organic wastes generated in academic buildings on campus.

In both WSFNR and OSE, there was a single room that generated more compost than any other lab or office, both were faculty or coffee lounges that many people congregated in and used. Individual offices and labs generally had relatively low collection totals, although users there may not have been willing to store and deliver their compost to a more centralized collecting area, such as coffee lounges. We feel it is important to note that it is likely that compost use rates will increase over time as more people become accustomed to the practice and if UGA were to actively promote it.

The WSFNR has approximately 220 graduate students and a similar number of faculty, although not all of the graduate students are on campus during any particular semester and many of the faculty on the roster do not have offices in the Warnell buildings. We estimate that graduate students and faculty generated the vast majority, over 90%, of all compost generated in this project. The University of Georgia lists 8,260 graduate students and 2,860 faculty, for a total of 11,120 people who would most likely be the target audience of this type of composting project at UGA. If we were to extrapolate the organic wastes generated in composted by this Pilot Project to this entire segment of the UGA population, roughly 50,000 pounds of organic wastes could be diverted from the landfill (for a direct savings of \$850), composted for landscaping (for an indirect savings of \$6,000), and a savings of 31,400 lbs of CO₂ emissions per year.

The undergraduate population is listed at 26,000 students, who could be engaged in composting projects in the libraries, student learning centers and other areas commonly used by undergraduates outside of dining halls. Since our project did not engage students in these areas, we cannot estimate the potential for composting in those areas, although it is likely to be roughly equivalent. If these students were engaged in a composting project outside of the dining halls, and composted only 25% of the organic wastes estimated for the graduate student and faculty populations, UGA could save an additional \$500 in tipping costs, \$3,500 in landscaping mulch, and 18,350 lbs of CO₂ per year. Again, these estimates do not cover compostable organic wastes from dining halls.

Expenses

We had budgeted for \$2,926 but only spent \$1,450. Student workers were paid \$758 and materials purchased cost \$676.25. We did not need to purchase large pushcarts, for which we had budgeted \$545, since WSFNR made pushcarts available to us. We also did not need to reimburse WSFNR for use of the vehicle, since graduate students are entitled to use it for official use. We also did not use all of the money allocated for student workers (\$1.050) since the funding period started a little later than

anticipated and all of the student workers left Athens to conduct graduate research field work up to 6 weeks prior to the official end of the project's viability.

Compost Pilot Project- Educational Outreach Final Report

prepared by: Holly Campbell

To promote our Compost Pilot Project and provide compost education to UGA students, faculty, and staff, as well as the broader Athens area community, we developed and attended educational outreach events. The intention behind these events was multi-faceted. We wanted to educate others on the importance of waste reduction, the relative ease of setting up a home or office composting system, the potential for replication of our project in other university departments, and the garnering of interest in a university wide composting initiative. The educational outreach events we developed included two informative composting classes that were co-taught by Athens Clarke County composting experts, Amanda Tedrow and Suki Janssen. Attendance in the classes included individuals from UGA and the broader Athens community and participants seemed inspired by what they learned. The classes provided participants the necessary tools to easily begin a compost project at their business or residence. In addition, we promoted our Compost Pilot Project and educated others on the merits of composting at an Earth Day celebration at the UGA Tate Center. We spoke with many interested individuals about our project and the composting process and provided composting literature.

Explaining how our Compost Pilot Project functioned (from collection at the university to compost development and utilization at UGArden) at all education outreach events, we attempted to remind individuals of their role in the bigger picture of waste reduction and how easily they could reduce their "waste footprint", or waste production, through composting. This not only reduces solid waste at UGA and in the Athens-Clarke area, but can be replicated in other communities where class and event participants may reside. In addition, as the main subject of the classes, compost is a useful garden amendment and enhances soil properties. The addition of it to our highly eroded Piedmont soils, from the soils at UGArden to class participant's yards, improves the health of our ecosystem.

In conclusion, our educational outreach efforts exceeded our initial expectations. They were an excellent platform for promoting our Compost Pilot Project, were successful in educating the public about the importance and relative ease of composting and waste reduction, and, as an added bonus, the act of individuals composting and applying it to their soil will improve the health of our ecosystem.

The following illustrate our educational outreach events.

Vermicomposting Workshop- Monday, April 1st, 6-8pm

- Class Description: "Learn to compost with worms! Vermicomposting is a low maintenance, composting system that utilizes earthworms to transform food scraps into a nutritive soil amendment. In this class, participants will learn how to construct and maintain a vermicomposting system. The first 25 participants receive a free vermicomposting bin with worms! Handouts provided. "
- Class held at: South Milledge Avenue Greenhouse Classroom, near UGArden
- Instructors: Suki Janssen (Waste Reduction Administrator for Athens-Clarke County Recycling Division) and Amanda Tedrow (ACC County Agriculture & Natural Resources Extension

Agent). Suki and Amanda co-instruct the popular ACC Master Composter course taught each Winter. (See Fig. 1 & 2)

- Class advertised through: UGArden, Warnell, and Odum listserves; UGA Sustainability email; flyers (see page 4); and UGA Events website
- Number participants: 26 (2-3 participants not affiliated with UGA but from the Athens community)
- Total Class Cost: \$470 (included: flyers for advertising class, 13 pounds earthworms, 27 Rubbermaid bins, class snacks, class handouts)
- Participant feedback:

"I've wanted to start vermicomposting for a year now and this is just the opportunity I was waiting for."
"Everyone was incredibly helpful and they provided all the information we needed to start and maintain a bin."

"Easy to understand and focused on the key points. Very informative."

"Getting free supplies is a great incentive to compost."

"It made it really easy to start a project that I've wanted to begin for a while."

"I've already killed my first batch of worms last semester, so now I've got great tips on how not to do that again."

"The teachers were awesome and gave awesome pointers on how to keep the worms alive and avoid bugs."

"Suki was extremely knowledgeable. I loved how we actually made worm bins and not just read about them."



Fig. 1: Suki Jannsen educates class participants on the benefits of vermicomposting.



Fig. 2: Suki discusses which food scraps are best for worms.

Compost 101 Class- Wednesday, April 10th, 3:30-5:30pm

- Class Description: " Learn to successfully compost kitchen scraps and yard waste into a nutritive garden amendment! This lecture explains the utility of composting and the materials and methods necessary to start and maintain a backyard composting system. Informative handouts provided. "
- Class held at: On campus, Miller Plant Sciences Building, Room 1501

- Instructors: Suki Janssen (Waste Reduction Administrator for Athens-Clarke County Recycling Division) and Amanda Tedrow (ACC County Agriculture & Natural Resources Extension Agent).
- Class advertised through: UGarden, Warnell, and Odum listserves; UGA Sustainability email; flyers (see page 4); and UGA Events website; press release (see page 5).
- Number participants: 16 (over half of participants un-affiliated with UGA and from the Athens community)
- Total Class Cost: \$8 (included: flyers for advertising class, class snacks, class handouts)
- Participant feedback:

"I enjoyed learning about the variety of methods used in composting."

"I enjoyed the step-by-step composting process."

"It was informative for me to learn what to put in and not put in a compost bin."

"The powerpoint presentation was very informative and I liked the handouts."

UGA Earth Day Event

- Location: Tate Center, UGA Campus
- Description of Event: Informational, tabled event informing UGA students, faculty, staff, and the Athens public about Earth Day.
- Our involvement: Educated visitors about our Compost Pilot Project one on one and through an informative poster. Provided educational handouts on composting.
- Approximate number visitors to our table: 40
- Event cost: \$7.25 (Handouts and poster)

Signage for Compost Bins

- Colorful, laminated, "how to compost" signs were developed for all 16 bins locations at the Warnell School of Forestry and Natural Resources and the Odum School of Ecology. These signs were used to indicate location of the bins within both schools as well as educate users on the appropriate organic matter to add to the compost collection bins.
- Cost: \$41 (color copies, lamination, and velcro to adhere signs to buckets)

Total Student Hours Dedicated to Educational Outreach

8 hours (\$80 total)

Upcoming Compost Classes:

Vermicomposting Workshop

Monday, April 1st, 6-8pm

UGarden Greenhouse Classroom (2500 South Milledge Ave.)

Learn to compost with worms! Vermicomposting is a low maintenance, composting system that utilizes earthworms to transform food scraps into a nutritive soil amendment. In this class, participants will learn how to construct and maintain a vermicomposting system. The first 25 participants receive a free vermicomposting bin with worms! Handouts provided. Please contact us to reserve a spot in this fun workshop!



Compost 101

Wednesday, April 10th, 3:30-5:30pm

UGA Campus, Miller Plant Sciences, Rm 1501

Learn to successfully compost kitchen scraps and yard waste into a nutritive garden amendment! This lecture explains the utility of composting and the materials and methods necessary to start and maintain a backyard composting system. Informative handouts provided. No registration required. See you there!

Course Instructors: Suki Janssen (ACC Recycling Division Coordinator) and Amanda Tedrow (ACC County Extension Agent). Suki and Amanda co-instruct the popular ACC Master Composter course taught each Winter.

Funded by a UGA Sustainability Grant for the Warnell & Odum Pilot Compost Project

For more information email: ugacomposting@gmail.com or call: 864-425-6668



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Compost 101 offered at the University of Georgia

Athens, Ga. – Compost 101, a class that will teach participants how to successfully transform kitchen scraps and yard waste into a nutritive soil amendment, will take place on Wednesday, April 10 from 3:30 to 5:30 p.m. in room 1501 of the Miller Plant Sciences building on the University of Georgia campus. Compost 101 is free and open to all.

The class will be taught by Suki Janssen, Athens-Clarke County Waste Reduction Administrator, and Amanda Tedrow, Clarke County Cooperative Extension Agent, co-instructors of the popular Athens-Clarke County Master Composter course.

Compost 101 is part of the Warnell and Odum Pilot Compost Project funded by the UGA Office of Sustainability and organized by graduate students Aaron Joslin and Holly Campbell of the Warnell School of Forestry and Natural Resources and Greg Skupien of the Odum School of Ecology. Their goal is to reduce the amount of solid waste at UGA by promoting composting.

“We’ve been collecting kitchen scraps from Warnell and Odum for a little over a month and we’ve managed to divert over 300 pounds of organic matter from entering the landfill,” Skupien said. “If the entire university participated just think about all the compost we could create.”

The group’s first class, a workshop on vermicomposting—a method of composting using earthworms—proved extremely popular, with more than 25 participants.

“I’ve been wanting to start vermicomposting for about a year now, and this workshop was just the opportunity I was waiting for,” said Mikey Saller, a graduate student in the UGA Law School.

Besides educational workshops, the project includes developing a system for collecting compostable waste from the Odum and Warnell schools and delivering it to the UGA Garden for composting. Joslin, Campbell, and Skupien hope that this pilot project will demonstrate the potential for composting on a larger scale.

For more information about Compost 101 or the Warnell and Odum Pilot Compost Project, email ugacomposting@gmail.com.



Future Composting Possibilities at UGA

Prepared by: Greg Skupien

Throughout the duration of the grant period our Composting Pilot Program was well received by both students and faculty of the Warnell School of Forestry and Natural Resources and the Odum School of Ecology. Additionally, community members from the greater Athens area demonstrated interest in our program through their participation in two composting classes. Most importantly, our pilot program was successful at diverting over 500 pounds of compostable material from the landfill while remaining under budget. Given the success of this initial composting program on the University of Georgia's campus we advocate for the expansion and elaboration of a campus-wide composting program. This campus-wide initiative could include multiple academic buildings, dining halls or both. A student-lead composting program similar to our pilot program may prove adequate on a larger scale, but the ultimate goal should be to involve the UGA Facilities Management Division, UGA Food Services, the Office of Sustainability and students in a university-wide collaboration. While such an endeavor may seem daunting at first it should be noted that several large American universities have already implanted such programs.

At the University of Virginia, food scraps have been collected from the university's dining halls since 2008. The compostable materials are then transported to commercial composting operations outside of town. This program represents collaboration between University of Virginia students, Facilities Management, the Environmental Health and Safety Department, and local business owners. Nearly 2.5 tons of organic waste is diverted from landfills each week as a result of the efforts made by these various stakeholders¹. At the University of Oregon pre- and post-consumer organic wastes are collected from campus cafes, student unions and dining areas in 35-gallon roll carts. These carts are emptied into a large dumpster that is then hauled off and delivered to a local commercial composter where it is turned into a useful soil amendment². Penn State University also has a university composting program which first began in 1997. This program is a cooperative effort representing collaborations between a variety of university entities. This program began as a 10-week demonstration project, much like ours, and has grown immensely. Food waste and napkins are now collected from seven dining halls, two campus hotels and conference centers and a campus daycare center³.

We suggest that the University of Georgia explore the possibility of developing a similar program using the aforementioned case studies to guide their efforts. A campus-wide composting program will take the collaborative effort of multiple University entities. However, the results of our Composting Pilot Program suggest that such an endeavor is both desirable and prudent.

¹ University of Virginia Facilities Management. 2010. Composting at UVA. Accessed online at: <http://utilities.fm.virginia.edu/recycling/Pages/Composting.aspx>. 06/22/2013.

² University of Oregon: Campus Zero Waste Program. 2012. Compost/Food Services. Accessed online at: <http://darkwing.uoregon.edu/~recycle/Composting.htm>. 06/22/2013.

³ Penn State Agricultural and Biological Engineering. 2013. Organic Materials Processing and Education Center. Accessed online at: <http://abe.psu.edu/research/facilities/ompec>. 06/22/2013