

COMPOSTING at School

San Diego Unified School District – Best Practices

What is Composting?

Composting is nature’s way of recycling. Leaves, garden waste, yard trimmings, and leftover food scraps can easily be broken down into a nutrient-rich “humus” through the composting process. Composting helps to reduce the amount of waste that goes into our landfills and the humus can be used in campus gardens and landscaping.

Why Compost?

Composting is a natural form of recycling that provides inspiring, hands-on learning opportunities for students and a variety of environmental benefits. Here’s what your school can achieve by composting:

- Conserve and return valuable nutrients and minerals back to the Earth
- Help students develop and put into practice good ecology habits
- Create learning opportunities to reinforce environmental messages
- Increase your school’s reputation for eco-excellence
- Reduce cafeteria landfill waste and its environmental impacts



BEGINNING COMPOSTING 101: Overview of School Composting Systems

There are several composting systems that can be used at school sites, however, the recommended systems are those that utilize enclosed bins for the composting process. Enclosed bins with secure lids help deter pests and contain odors, although larger “open” bin systems can be designed to minimize pest intrusion.

The amount of material you want to capture and the type of composting method you decide to implement will help determine the size and type of system you should use. There are two main composting methods, 1) Active or “hot” composting, and 2) Passive or “cold” composting.

- 1) **Active or “hot” composting:** The quickest way to produce rich compost is to create a hot, or active, compost pile. A “hot” pile can reach an internal temperature of 160° (140° is best) and “active” because it destroys weed seeds and disease-causing organisms. Active compost piles require a larger bin system with easy access for frequent turning/mixing of the material. For information on active composting, please refer to the *Additional Resources* section on the last page.
- 2) **Passive or “cold” composting:** This method requires less effort from the gardener, yet the decomposition can take substantially longer— 6 months to a year or more. This method often uses a plastic dome type bin, many of which don’t provide for easy turning of material. Cold compost piles don’t reach high enough temperatures to kill weed seeds, so weeds should not be included in the compost pile.

Compost Bin Systems

Compost bin systems range from plastic domes and bin tumblers, to a multiple bin wooden structure. Ideally, bins should be enclosed and have a secure lid.



It's important to be sure compost bins are as rodent proof as possible. For wooden or other "open" style compost bins, this can be accomplished by installing $\frac{1}{4}$ inch hardware cloth on the ground and around the sides of the bin. A hinged lid should also be attached. Same size pallets can be used to construct an inexpensive compost bin system, but again, it's best to install the hardware cloth around the outside to deter pests. If plastic domes are used, it is recommended to have multiple vessels because they tend to fill up quickly and material needs a longer time to decompose.

If space allows, preference should be given to a two or three-bin wooden system, because they are easier to turn, and can hold more material than the plastic domes. This allows for future expansion of composting efforts as needed. Any non-active bins could be used to hold carbon materials (leaves, sawdust, shredded paper/shredded cardboard) or finished compost. This type of bin system also allows students and others to see the compost process and observe it more thoroughly than if it's contained in a black plastic dome.

Vermicomposting

Vermicomposting, or worm composting, is also an option for schools to compost small amounts of food scraps. Many schools already have small classroom worm bins that utilize worms to digest food scraps and create nutrient rich "castings." However, these small-scale systems are not capable of handling large amounts of food waste from the cafeteria or student lunches. Larger vermicomposting systems can be built to handle greater volumes of food waste. For more information about vermicomposting and worm bins, see the *Additional Resources* section on the last page. For larger scale food waste composting, see the next section.



ADVANCED COMPOSTING 201: Food Waste Composting Tips for School Gardens

Incorporating food waste into your school garden compost activities is a great way to minimize waste generated at school and provides additional nutrients for your garden. In order to compost food waste safely and effectively, please follow the guidelines outlined below.

For information on basic composting practices, please see the *Additional Resources* section on the last page.

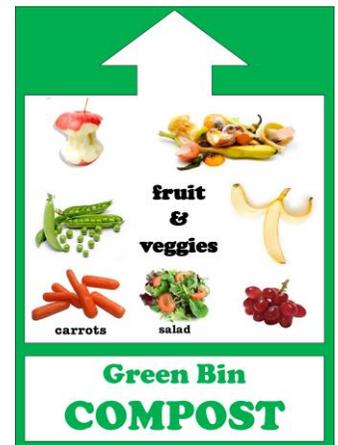
Food Waste Collection

There are two main sources of food waste at school: 1) Left over food from the salad bar and/or school kitchen, and 2) Food waste from student meals (after it has been served to students or brought from home). It's easiest to start a food waste collection program from the salad bar or kitchen area first, before attempting collection from student meals that have already been served. It is recommended that ONLY FRUIT and VEGETABLE waste be composted in school gardens to deter rodents or other scavengers and minimize odors. Other related items that could also be composted include coffee grounds, tea bags, napkins/paper towels, brown lunch bags, shredded paper, and paper lunch trays.

Salad Bar and Kitchen Food Waste

The District's Food Services Department manages all food and associated waste from the school meal program. Following are the steps to collect salad bar/kitchen food waste:

1. Ask your principal if composting on campus is an approved activity
2. If approved by the principal, contact the Farm to School Specialist II, Ashley Cassat at acassat@sandi.net (858) 627-7323
3. Work with Food Services staff to estimate the amount of food waste that can be expected. Depending on composting capacity, arrangements could be made to collect salad bar waste only on certain days.
4. Set up a collection time table with cafeteria staff
5. Set up your collection station
6. Collect waste on the approved schedule



Tools you will need before you begin collecting waste:

1. A green* container with lid and wheels or bucket with a tight fitting lid that stays in the cafeteria
2. Proper signage for the green container (showing fruits & veggies only)
3. A designated student and adult to pick up waste at least twice a week
4. A safe and secure place to compost waste on school site
5. Water source to rinse out collection container(s) every time it is emptied and prior to returning to the cafeteria

*Color-coded bins help students and staff visually associate certain types of waste receptacles with the type of collection program implemented (i.e. green=compost, blue=recycling, black/gray=trash).

Student Food Waste

Food waste from student meals that were already served (also known as “post-consumer food waste” or “plate waste”), can be a significant contributor to the school’s waste stream. Collecting this food for



composting requires extensive education and outreach, as well as a dedicated team of students and garden volunteers. If your school is interested in collecting student food waste for composting, please contact the District's Recycling Specialist, Janet Whited, at jwhited@sandi.net or (858) 637-6268 for more information, resources, and assistance. For an example of daily food waste collection and composting tasks, please see Appendix 1.

Appendix 1: Food Waste Collection and Composting Tasks

The following information was adapted from *School Composting – A Manual for Connecticut Schools*, funded by the Connecticut Department of Energy & Environmental Protection (DEEP).

<http://www.ct.gov/deep/cwp/view.asp?a=2718&q=325392>

Day-to-Day Composting

Student and staff volunteers need to be trained in the daily routine of processing food scraps. Scheduling these tasks depends on the school lunch schedules, the availability of volunteers and what works best for kitchen staff involved. This routine can be followed even if food scraps will not be collected on a daily basis.

Daily Tasks

A team of two or three students, supervised by an adult, can carry out the following daily tasks in about fifteen minutes.

Task 1: Collect Food Scraps

Task 2: Weigh Food Scraps

Task 3: Transport Food Scraps to Bins

Task 4: Take Compost Temperature

Task 5: Spread Food Scraps

Task 6: Layer with Bulking Material

Task 7: Clean-up



Task 1: Collect Food Scraps

Food scraps should be deposited into special containers located in the cafeteria/kitchen area. For food from student lunches, containers should be located next to the trash and recycling containers in the lunch arbor area. Containers can be lined with plastic liners (which would be disposed of later) or paper grocery bags for 5-gallon buckets (which may get soaked through, but will help somewhat with container cleanliness). Lid should still close tight. Students retrieve the special food waste containers from designated location(s). Ideally, food scraps should be transported to the compost area daily. If using scraps from school kitchens, an alternate collection schedule can be arranged with Food Services staff depending on the volume of material generated. It is mandatory that collected food scraps be removed from the kitchen area at a minimum of two times per week.

Task 2: Weigh Food Scraps (if possible)

Recording the weight of food scraps serves several purposes. It can be used to keep track of the total amount of food processed in a given amount of time, which shows the savings in the disposal of solid wastes produced by the kitchen or from student lunches (post-consumer waste). The total weight of the food wastes can be compared to the weight of the compost product. Weight records can be used for constructing math problems and science classes can track and analyze the compost operation, including the amount of food processed.

The best type of scale to use is one where the weight can be viewed easily from the side since a container will probably be covering the entire top of the scale (such as with a bathroom scale). Or consider purchasing a

scale that has a locking feature so that the weight is held still and can be read after the food scraps are removed.

Students would place the food scrap collection container on the scale to weigh (subtract the weight of the empty container) and record the amount of food on a chart. The information gathered should be kept in a binder or folder for later use by students analyzing the data.

Task 3: Transport Food Scraps to the Compost Bins

Students (or staff or volunteers) wheel and/or carry the food scrap collection containers to the compost bin(s). It is best if students/volunteers have access to work gloves, a pitchfork or shovel and a compost thermometer that can be picked up on the way to the compost area if these items are not stored near the compost bins.

Task 4: Take Compost Temperature

The long probe of the compost thermometer is carefully pushed into the center of the compost pile where it is the hottest. The temperature is read and recorded on a separate temperature chart. Taking the temperature of the pile is a way to monitor the progress of the compost. A “hot” working compost pile will go through stages, getting hotter as the decomposers work and reproduce, and then cooling off.

Temperatures can reach 140° if conditions are favorable. If the compost cools down before most of the decomposition has occurred, it is a sign that the balance of food, moisture, air and bulking materials needs to be adjusted. Usually, a drop in temperature indicates it’s time to turn the pile by forking it into the neighboring compost compartment.



Task 5: Spread Food Scraps

The easiest way to manage the food waste is to line the food waste collection containers with a plastic trash bag. Secure the bag around the rim with large binder clips. If not too heavy, students can lift the bag out of the container and empty it into the compost bin. Plastic bags must be disposed in the trash. Using a compost bin that has removable front boards makes the lifting easier for students. Scraps from a 5-gallon bucket can be dumped directly on the compost pile. Food should be spread somewhat, not piled high in the center.

Task 6: Layer with Bulking Material

A few inches of “browns,” such as soiled paper, shredded paper (including ripped up paper food trays), wood chips, wood shavings or brown leaves, should be spread with a pitchfork or shovel to cover the food completely, making it less attractive to animals. The lid, of course, needs to be latched.

Task 7: Clean-Up

Students can use rags (and water if available) to wipe off the shovel and thermometer before storing the equipment. Food scrap collection containers are required to be rinsed out prior to returning them to their designated location(s).

'The ground's generosity takes in our compost and grows beauty! Try to be more like the ground.' — Rumi

Additional Resources

District Resources & Composting Basics:

- **IMPORTANT - School Site Guide for Gardens and Landscape:** District guidelines for school gardens
<http://www.sandi.net/cms/lib/CA01001235/Centricity/domain/132/facilities%20planning%20docs/School%20Site%20Guide%20for%20Gardens%20and%20Landscape.pdf>.
- **Healthy Gardens, Safe Food** (pdf)– County of San Diego, Department of Environmental Health, Community Health Division (http://www.sdcounty.ca.gov/deh/food/pdf/publications_composting_tips.pdf)
 - Provides tips and composting basics (“active/hot” composting), as well as guidelines for use of manure at school gardens.
- **Solana Center for Environmental Innovation** <http://www.solanacenter.org/>
 - A local non-profit that provides extensive information and resources on composting, vermicomposting, information on compost bins, and educational resources, etc.

Vermicomposting (using worms):

- **CalRecycle webpage** <http://www.calrecycle.ca.gov/organics/worms/>
 - Information and resources on how to compost with worms!

Other Composting Options & Resources:

- **Create Your Own Eden – Composting at School** (New Zealand)
 - http://www.createyourowneden.org.nz/schools_guide.html
 - Provides a good comparison of traditional, worm, and bokashi method composting at schools.
- **Composting in Chicago Public Schools**
<http://www.cps.edu/GoGreen/Documents/CompostingCPSGuide.pdf>
 - A thorough “Go-Green Guide” for setting up a compost program at schools.

Credits

Some information for this handout was adapted with permission from:

Cafeteria Composting in Schools – School Garden Project of Lane County (Oregon) (pdf)

<http://schoolgardenproject.org/wp-content/uploads/2013/06/ccm.pdf>

- A good manual that provides implementation strategies for setting up a food waste collection and composting program at schools. Includes some advantages and disadvantages of various systems, troubleshooting compost issues, and frequently asked questions (FAQ’s).

Material from the following publication was utilized in Appendix 1:

School Composting – A Manual for Connecticut Schools

http://www.ct.gov/deep/lib/deep/compost/compost_pdf/schmanual.pdf

- This manual provides detailed school composting implementation information and printable forms (charts) that can be modified for use in SDUSD.

For additional information, contact Janet Whited, SDUSD Recycling Specialist, at jwhited@sandi.net.