

King County Green Schools

Best Practices Workshop

May 21, 2009

**On-Site Food Scrap Composting**

Kinley Deller

King County Solid Waste Division

# Why on-site composting?

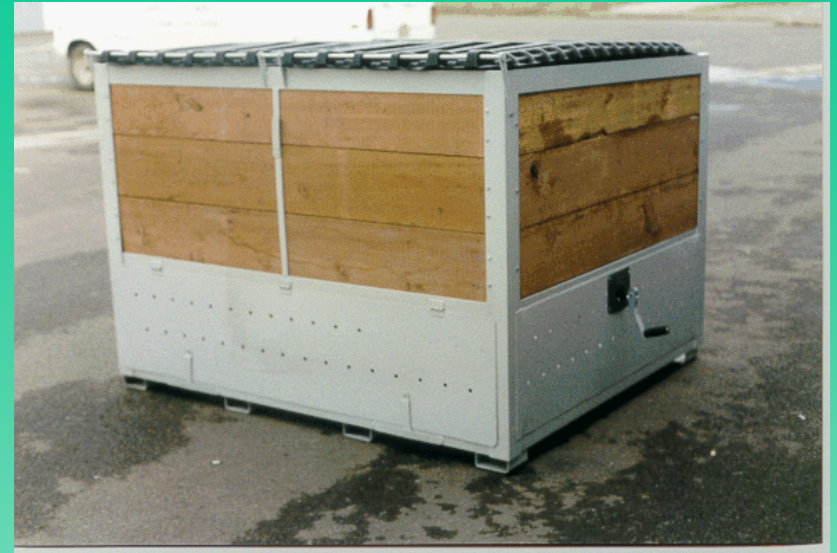
- Great opportunity for hands-on education
- Compost can be used to nourish soil – and to reduce mulch and fertilizer costs
- If food scrap collection is not available
- Can reduce costs over time:  
(7-year payback period)

# On-site food scrap composting 101

- Enclosed system for turning food scraps into compost
- Two types of systems:
  - (1) Vermicompost (worm) system
  - (2) Thermophillic (heat generation) system
- Keep out rats and mice / tightly control for flies
- **No** meat or dairy products
- Fresh vegetative materials compost best
- Requires on-going dedication to be successful



Can-O-Worms



Worm WigWam 5-6



Earth Tub



Super C3

# What Can Be Composted On-site?

Earth Tub

## Food For Composting

YES	NO
Vegetables	Meat
Fruit	Oils
Bread	Dairy Products
Napkins	Questions? Call Kinley Deller 206-296-4434
Grains	
Pasta	
Coffee Grounds	



Vermicompost Systems

## What Worms Will Eat

YES	NO
Fruits	Oils
Vegetables	Dairy products
Tea bags	Meat
Coffee grounds & filters	Questions? Call Kinley Deller 206-296-4434
Herbs	

**REMEMBER**  
Chop the pieces small  
(less than 1 inch is best)



# WORM MENU

We like fruits  
We like veggies  
We like peelings, rinds and cores  
We'll eat tea leaves and some coffee  
We'll eat roots and herbs aplenty  
We even like an eggshell or two  
When all ground up it does some good

Breads and cakes are just so-so  
Grains and oats are slow to go  
Lots of fiber, starch and carbs  
Just won't break down  
They tend to mold

Oils, bones and cheese are gross  
Butter sticks inside our throats  
Meats and fats are really bad  
They make the health departments mad  
  
And remember - we like things small....  
  
Smaller than an inch  
Eating it's a cinch  
Bigger than an inch  
We'll stick it in the corner and let it mold

By Kinley Deller

# Should my school compost food scraps on-site?

- What percentage of our school's food scraps do we want to capture?
- Will we use the project as a hands-on educational tool?
- Can we divert vegetative scraps without also adding significant amounts of meat and dairy products?
- Do we have ...
  - two staff leaders?
  - administrative and custodial support?
  - sufficient outdoor space?

# What are the steps to effective on-site composting?

- Determine the best system for your needs
- Purchase and set up the system
- Add bulking agent or bedding
- Add food scraps
- Compost (maintain moisture and air flow)
- Harvest compost
- Cure compost
- Use compost!



# What kind of composting system should we get?

- How much money do we have?
- How many pounds of food scraps do we generate per day or week? (Use Green Schools Program assessment form.)
- What will we do with the finished compost?
- Who will manage the system? And are they knowledgeable about composting principles?

# System Options

<b>Model</b>	<b>Cost</b>	<b>lbs/day of food scraps</b>
Amazing Can-O-Worms System	\$ 152.00	5-6
Earth Tub	\$ 7,495.00	40-500
Expandable Worm Tower	\$ 185.00	1
Vermitopia	\$350.00 (depending on construction costs)	16
Worm Wigwam	\$ 483.00	8-10
Worm Wigwam Model 5-6	\$ 4,895.00	75-150

# System Options



BioStack



Worm Bin



Vermitopia



Worm Tower



Worm WigWam



Worm WigWam 5-6



Earth Tub



# Other Considerations

- Does it require electricity?
- Will it need to sit idle for a while? (summer)
- Is it truly rodent proof?
- Will odor be an issue?
- Does it have any special seasonal needs (heat, sun protection, etc.)?
- Other possible costs?
  - platform/base
  - electrical hook-up
  - plumbing hook-up
  - fencing
  - bulking material

# Local Schools: On-Site Composters

- **Earth Tub**

1. Crestwood Elementary School (Kent SD)
2. Waskowitz Outdoor Education Center (Highline SD)
3. Pacific Crest Farm

- **BioStack**

1. Briarwood Elementary School

- **Worm WigWam**

1. The Evergreen School (Shoreline, private school)
2. Camp Sealth

- **Worm bins**

1. Explorer West Middle School (unincorporated KC)

# Recognition: Crestwood's Earth Tub

## The Seattle Times

Saturday, February 3, 2007 - Page updated at 12:00 AM

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### Feeding "The Big Pig" and saving the planet

By Judy Chia Hui Hsu  
Seattle Times staff reporter

She's a lactose-intolerant vegetarian — and the kids at Covington's Crestwood Elementary School know just how finicky she is. Every day at lunchtime, they sort her chow, putting leftovers like cookies, bread and fruit into paper-bag-lined buckets.

She's bEARTHa, the first Earth Tub composting system in a King County school. And three dutiful fifth-graders tend to her daily after they've eaten.

The bEARTHa boys — Zach Barlow, Christopher Katsafanas and Evan Sullivan — meet at the gym, gather the food scraps into a larger container, weigh and record its contents, then pour the mishmash into bEARTHa after checking the temperature of the compost inside. It's a repetitive chore that one of the boys says is worthwhile. "To keep trash and stuff from going into the landfill," Evan said.

Through a partnership between King County's Solid Waste Division and Crestwood, bEARTHa arrived in 2004 as part of the county's three-year pilot program for on-site food-waste composting. Other organizations are testing different composting methods.

Crestwood, one of five organizations using an Earth Tub in this program, has helped show that the bEARTHa system is the easiest to use and most effective for medium-scale composting, said Kinley Deller, the county's waste-diversion specialist. The county paid for 75 percent of the system's initial cost, but this year the school takes ownership of bEARTHa, which students call "The Big Pig." The Earth Tub, made by Green Mountain Technologies, is an enclosed system for composting food waste and looks like a giant round Tupperware container — the size of a hot tub — with a rotating lid.

For several minutes, the boys spin bEARTHa, mixing the new scraps with the decomposing mound, while a mechanical shaft also turns. They may add woodchips or water to get the proper consistency. For the process to work well, the materials need to be moist but not soggy. The contents "cook" inside the tub — bEARTHa works best at 120 to 140 degrees — until they're removed and bagged as compost at the end of the school year. The school then sells



ERIKA SCHULTZ / THE SEATTLE TIMES  
Christopher Katsafanas, 11, stirs bEARTHa's new lunch contents Wednesday at Crestwood Elementary School. Students feed bEARTHa, an Earth Tub composting system, vegetarian lunch scraps each day. The compost is later sold back to the community.



ERIKA SCHULTZ / THE SEATTLE TIMES  
Evan Sullivan, left, Christopher Katsafanas and Zach Barlow monitor the temperature of compost inside bEARTHa, an Earth Tub composting system, on Wednesday during lunch at Crestwood Elementary School.



**Questions?**