



Working your waste: benefits of residuals based soil amendments for urban systems

Sally Brown

University of Washington

slb@uw.edu

Every city has feedstocks

- Both food scraps and feces (wastewater influent) have a direct connection to soil
- Repurposing these wastes to function as soil amendments is increasingly common




Food scraps

- Can easily be composted
 - With yard waste
 - Alone
- Municipal green bin
- Community compost
- Home systems

LENZ
ENTERPRISES

Home / Compost / GreenBlenz Compost



GreenBlenz Compost


Sustainable solutions for:

Farm, Garden, and Landscape

GreenBlenz Compost is a high-quality compost produced using a select variety of organic residuals. Its stable composition works great for vegetable gardens, landscaping, agriculture, and a variety of other applications.

Colón conquers with compost

Posted January 7, 2015



Jodie Colón, the project manager for the NYC Compost Project at the New York Botanical Garden, explains how to compost at a site on the grounds of the garden on Monday.

Photo by Adrian Fussell

Municipal biosolids- solids from wastewater treatment

- Can be treated to be pathogen free
- Consistent, high nutrient, no contaminants



[Home](#) [What is Bloom?](#) [News](#) [Resources](#) [Contact us](#)



[Order](#)

Good Soil, Better Earth.

Give crops, trees, turf, and flowers a boost with Bloom®, a recycled, slow-release fertilizer and soil amendment made from Class A Exceptional Quality biosolids. Expect lush, long-lasting growth with Bloom's rich organic matter, slow-release nitrogen, iron and other nutrients.

Grow Be

What Is Bloom



Using either to enrich soils will also reduce CO₂

- Biosolids (Brown and Beecher, 2020)

Established Agriculture & Compost Pickup



Transport: Personal vehicle (Mg CO ₂ /ton compost)	0.09 Mg
Soil carbon (Mg CO ₂ per Mg)	-0.036 Mg
Fertilizer offset (Mg CO ₂ per Mg)	-0.09 Mg
CO ₂ per ton compost	-0.22 tons
CO ₂ per ton biosolids	-0.13 tons

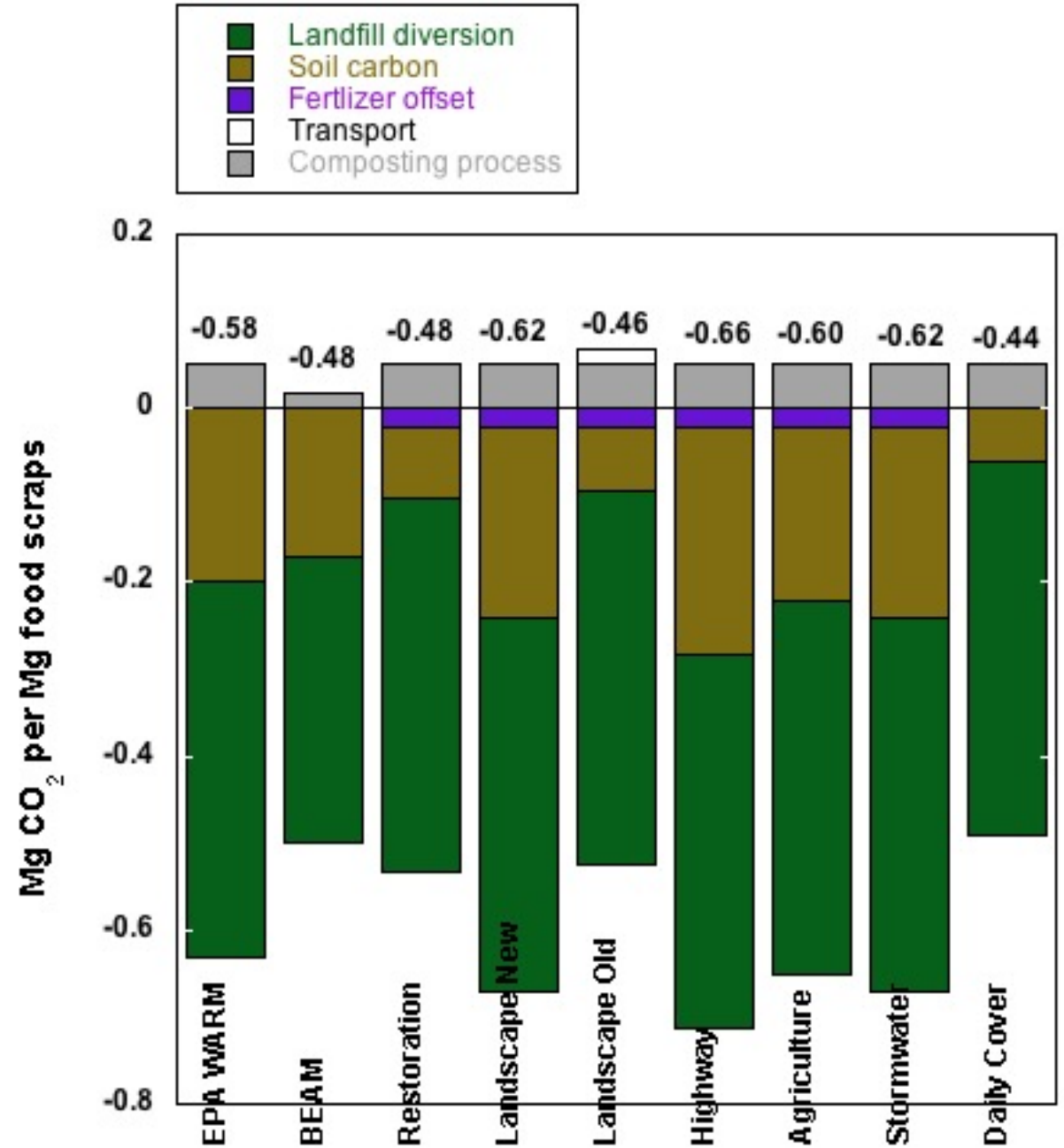
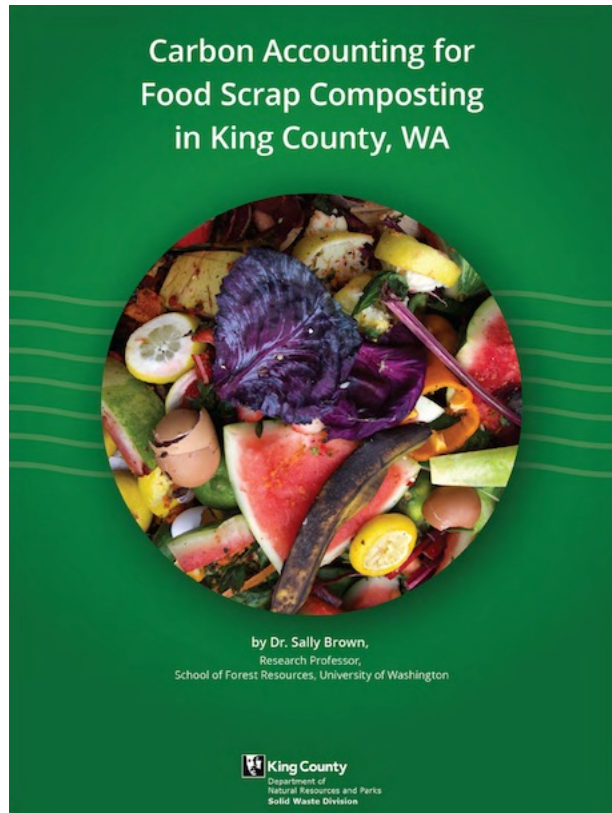
New Agriculture & Compost Delivery



Transport: 5 ton truck (Mg CO ₂ /ton compost)	0.005 Mg
Soil carbon (Mg CO ₂ per Mg)	-1.1 Mg
Fertilizer offset (Mg CO ₂ per Mg)	-0.09 Mg
CO ₂ per ton compost	-1.20 tons
CO ₂ per ton biosolids	-0.72 tons

Food scraps

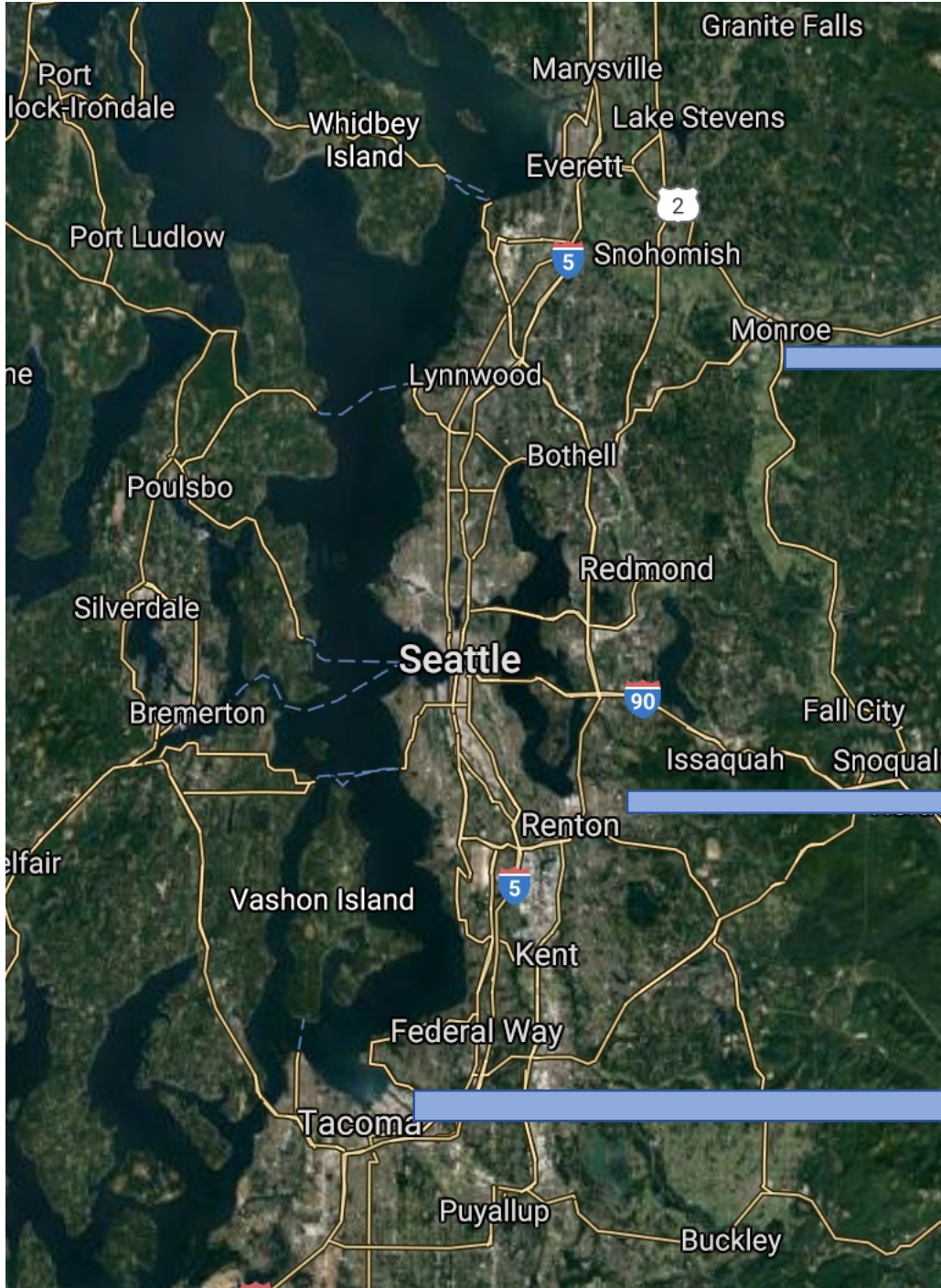
(<https://kingcounty.gov/~media/depts/dnwp/solid-waste/linkup/documents/carbon-accounting-food-scrap-composting.ashx?la=en>)



Soil response

- Will vary based on the state of the soil and the quality of the amendment





Tacoma



Control treatments
Light blue shading
indicates new plot
locations for 2019



Biosolids top soil
treatments.

Monroe



Control 2019



Control 2018



Vermicompost



Bokashi



Two soils: two types of response

- Tacoma
 - Soil was likely fill from construction. Had not been amended and had been a remnant soil



- Monroe
 - Soil located in former brick factory had a long history of manure application



Two soils: two types of response

	Total C	Total N	Bulk Density
Monroe	%		g cm ³
Control	4.65	0.28	0.95
Vermicompost	6.34	0.37	0.89
Tacoma			
Control	3.2	0.21	1.25
Tagro	10.1	0.62	0.59

Two soils: two types of response

Tacoma



Two soils: two types of response

Monroe

	Control	Vermicompost
	g per plant	
Broccoli	875	280
Kale	188	139

But when that same vermicompost was added to the Tacoma soil

Tacoma

Control Fertilizer, Worm tea, Bokashi, Groco, Tagro and Vermicompost



Residuals based amendments

- Will provide carbon benefits
- Will increase OM in soils with related improvements in soil health
 - Extent depends on initial state of soil
- Can bring highly disturbed urban soils back to high productivity

