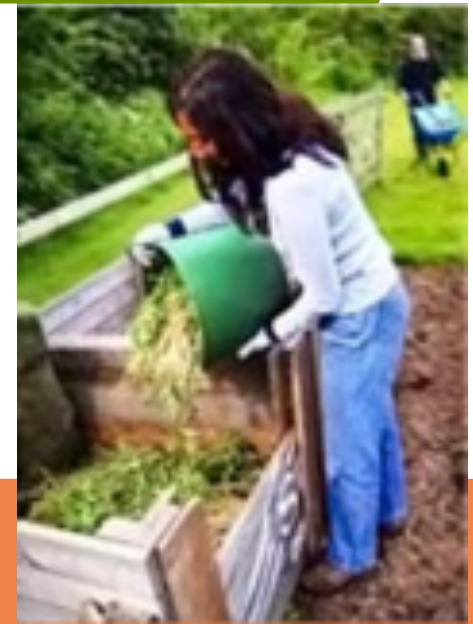


INTRODUCTION TO COMMUNITY FOOD SCRAP COMPOSTING

Athena Lee Bradley
Windham Solid Waste Management
District
Northeast Recycling Council



Community Composting Project

- 6 States: Connecticut, Maine, Massachusetts, New Hampshire, New York, & Vermont
- Goal: Create at least one sustainable community compost site in each state for managing food scraps & other organics

Community Composting

- Produces compost for local use
- Promotes community connections
- Builds resident food waste management awareness & participation
- Can play an essential role in the evolution of food scrap diversion, especially in small town/rural areas

Community Composting, cont.

- Often volunteer run; some staffed
- Garden groups, neighborhoods, nonprofit organizations, public sector, farms, schools, businesses, housing complexes, other
- Range of sizes - 10 sq. ft. – 20,000 sq. ft.
- Range of compost systems

Community Driven Success

Group Brainstorm

- **Potential benefits (outputs) & Inputs**
- **Goals – Guide your decisions**
- **Opportunities, Needs, Barriers, Concerns?**

INPUTS



**BINS OR BIN
MATERIALS, TOOLS,
EQUIPMENT**



FEEDSTOCKS



PEOPLE'S TIME



**FINISHED
COMPOST**



**ENVIRONMENTAL
STEWARDSHIP**



EDUCATION



**COMMUNITY
ENGAGEMENT/
VOLUNTEERISM**

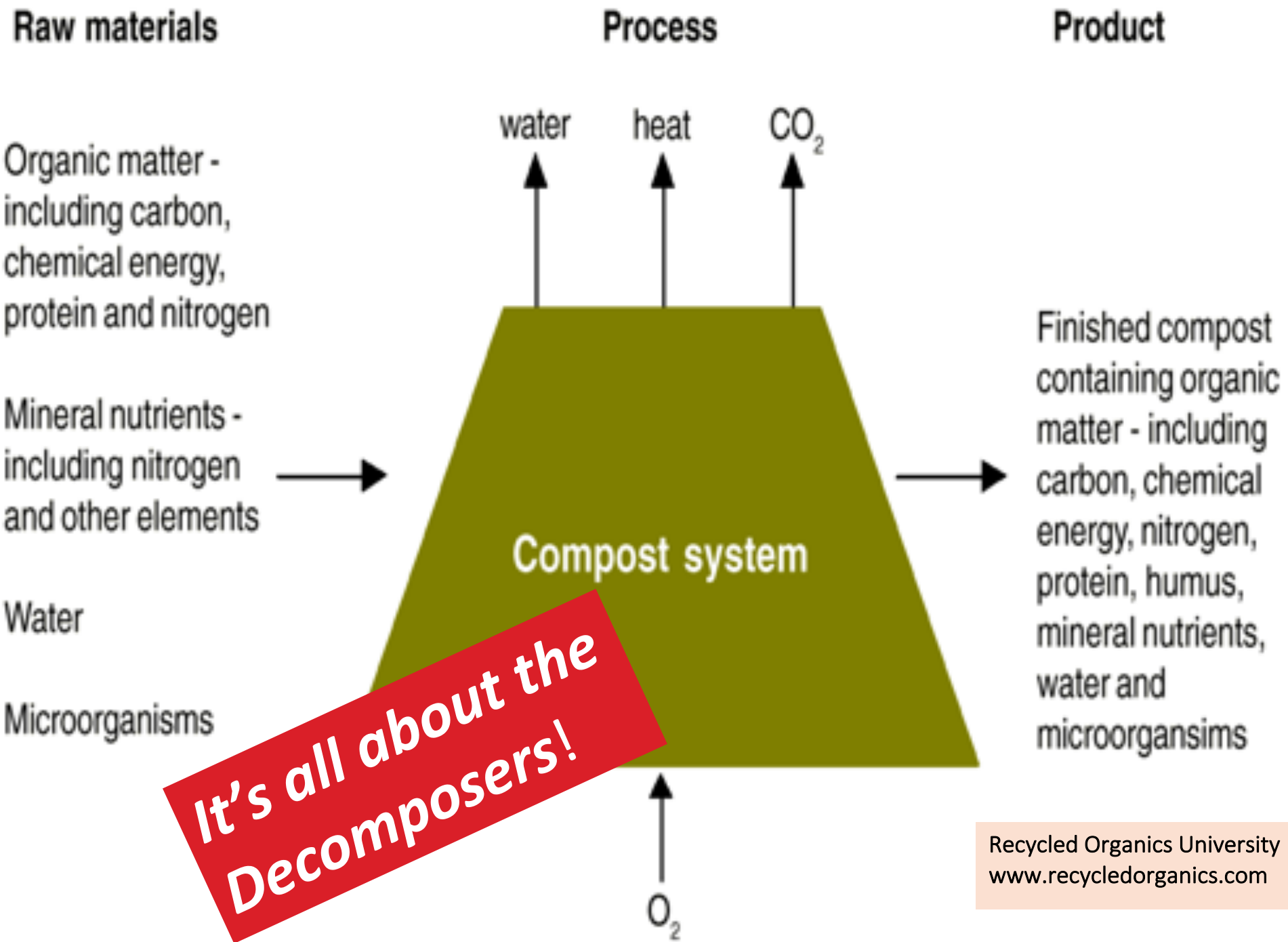
Science of Composting

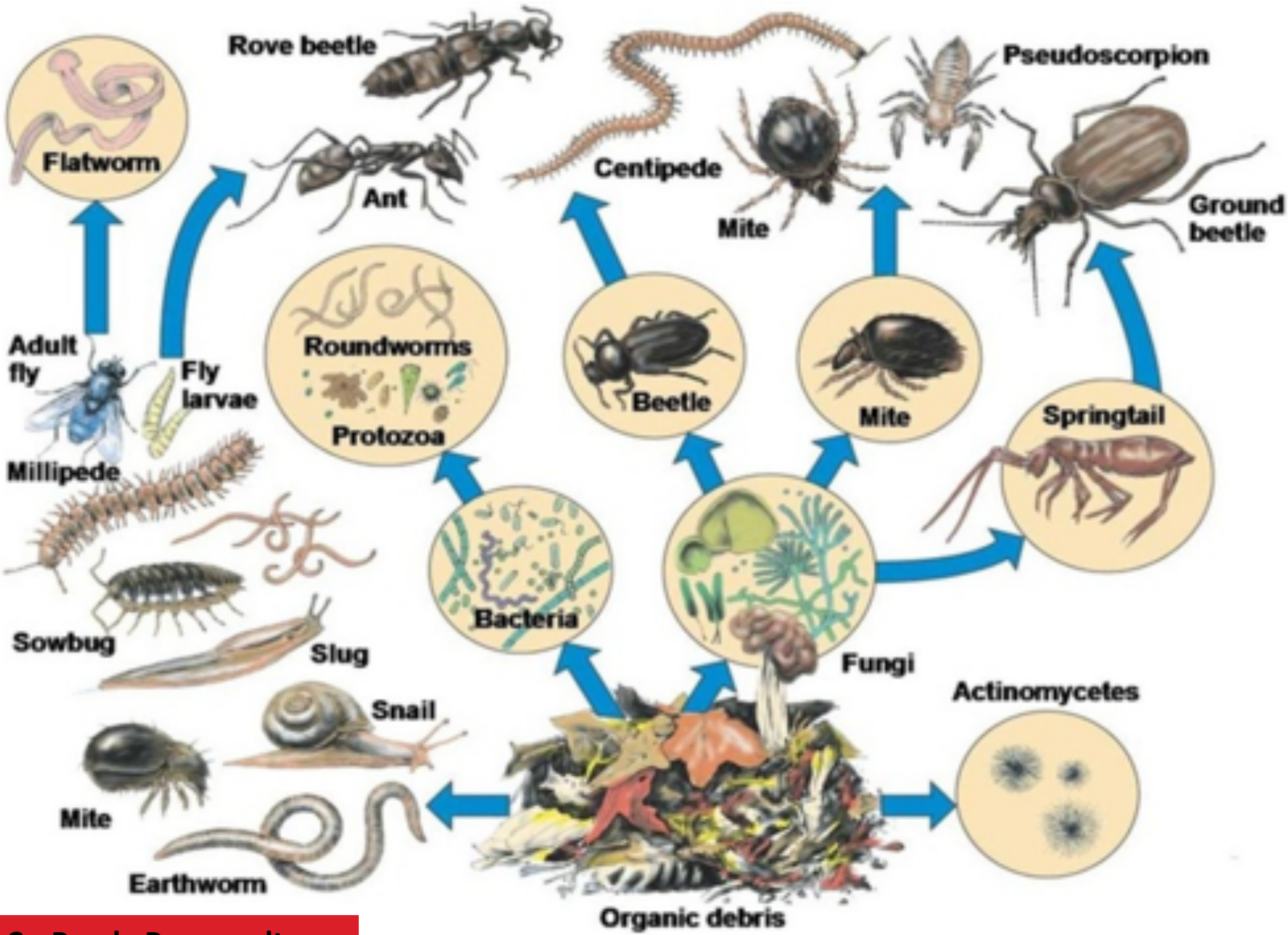
*Or, how to be a good
decomposer manager...*

What is Composting? Compost?

- Controlled, aerobic biological process
- Compost is a humus-like, value-added product
 - ✓ Organic matter, nutrients, organisms to soil, water holding capacity







Composting Science Basics

- **Aeration**
 - ✓ Oxygen concentrations: 10-14+%
- **Carbon to Nitrogen (C:N) Ratio**
 - ✓ 20:1 – 60:1
 - ✓ Preferred 30:1-50:1
- **Moisture: 40 to 65 percent**
 - ✓ Like a damp sponge

Science, cont.

- **Optimum pH range: 5.5 to 8**
- **Temperature – 90°-150°F (32°-66°C)**
 - ✓ *If all is well with your pile, temperatures will rise!*
 - ✓ *Process to Further Reduce Pathogens*
 - **131°F for 3-15 days (f of system)**

Sample Carbon & Nitrogen Ratios of Various Organics

Carbon Sources	Carbon:Nitrogen Ratio
Yard wastes	50 - 90:1
Straw/hay	50 - 80:1
Wood chips/sawdust	250 - 500:1
Nitrogen Sources	Carbon:Nitrogen Ratio
Vegetable scraps	10 - 30:1
Fruit scraps	10 - 30:1
Grass & garden gleanings	10 - 20:1
Chicken manure	10 - 25:1
Cow manure	20 - 30:1
Horse manure	25 - 30:1

Adapted from Robert Rynk, "On-Farm Composting Handbook," Natural Resource, Agriculture, and Engineering Service, 1992.

FEED STOCKS & RECIPE DEVELOPMENT



What's your site goal?

How much volume can your site handle?

How much volume can your team handle?

Brainstorm: Partnerships for Diversion?

Acceptable Materials

- Fruit & vegetable scraps, peels
- Bread/pastries, pasta, rice, beans
- Dairy products
- Nuts & nut shells
- Coffee grounds/filters & tea bags
- Sawdust
- Leaves, yard/garden trimmings
- Napkins, paper towels
- Livestock bedding/manure
- Straw



Food Scraps Sourcing

- Community gardeners
- Schools
- Businesses
- Nonprofits
- Churches
- Community

- Start collecting small volumes & grow it!
- Year-round, consistent supply of feedstocks!

Barre Town, Vermont



Senior citizen multi-family housing

Image Cr.: Cassandra Hemenway, CVSWMD

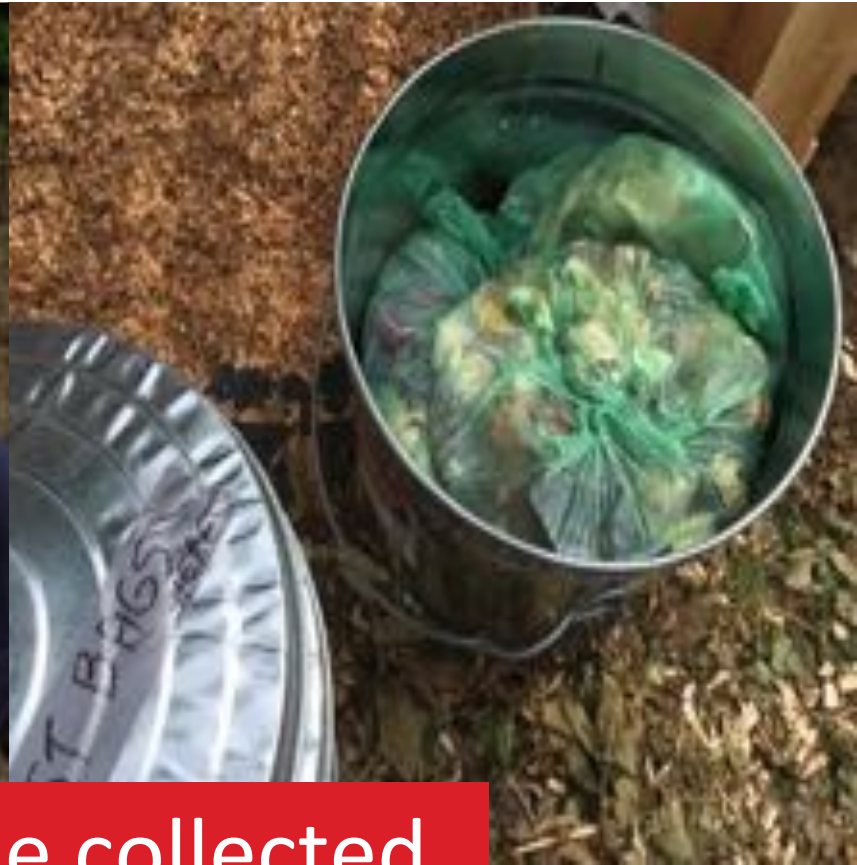
Carbon Sourcing

- Woodworkers, town, utility crews, landscapers – sawdust, wood shavings
- Neighborhood, landscapers – leaves
- Farmers – livestock bedding



- Year-round, consistent supply of feedstocks!
- 2-3 times volume than food scraps
- Keep Dry

Community Garden Collection



The quality of the collected materials is vital to success!!

Farmer's Markets



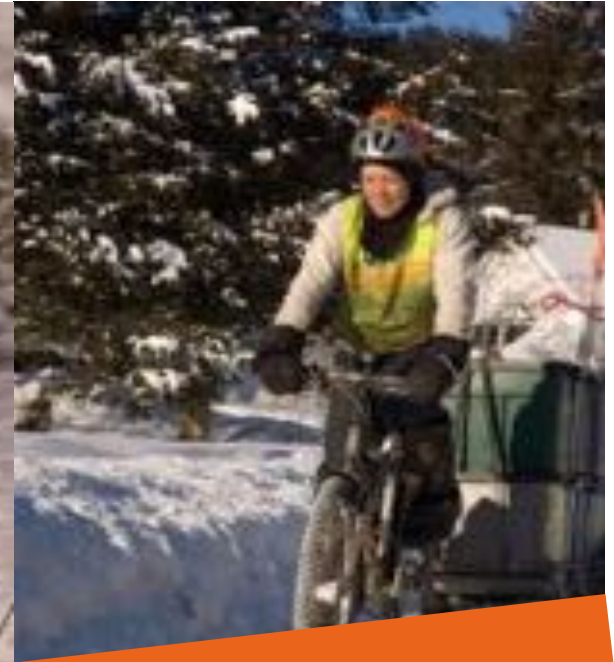
Images Cr.: BioCycle.net



Farm-based collection

Image Cr.: Elements Mountain Compost

Community Collection by Bike



Pedal People
Northampton, Massachusetts

Basic Recipe

- **2-3 Parts Carbon - “Brown” materials**
 - Woody, dry materials: wood shavings, leaves, soiled/shredded paper, straw, animal bedding
- **1 Part Nitrogen - “Green” materials**
 - Fresh, “wet” materials: food scraps, grass clippings, garden trimmings (no weeds), manures
- **Keep it small!**
 - ✓ Mowing, grinding, chipping, or shredding

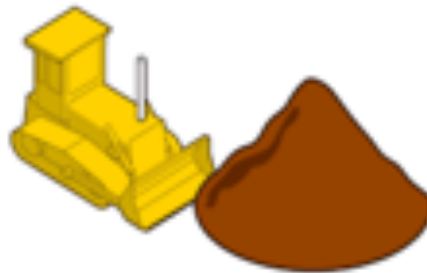
Tumblers - 1 Part C: 1 Part N
Wood shavings recommended

**Does your site
have enough
of the right
mix?**

**High Carbon
3 volumes**



**High Nitrogen
1 volume**



Recipe, Cont.

- **A little soil, finished compost, or horse manure**
 - ✓ Inoculates composting materials
- **Moisture**
 - ✓ Squeeze test - like a damp sponge
 - ✓ Keeps microorganisms alive & active

General TIPS

- Mix ingredients together to create a homogeneous mix
- Adding food scraps
 - ✓ Balance C:N ratio, moisture, bulk density
 - ✓ Proper aeration
- Observation, temperature, look & feel of compost, trial & error

**COMMUNITY COMPOST
SYSTEMS &
OPERATIONS**



What's Right for your site? **System Considerations**



Photos: upper left: Bakersfield Elementary Middle School, Bakersfield, VT; lower left: Red Hook Community Farm, Brooklyn, NY (photo credit NYC Master Composter Manual, DSNY); upper right: Charlotte Central School, Charlotte, VT; lower left: La Plaza Cultural, Manhattan, NY

System Considerations

Available materials
Community need/goals
People power/skills
Site capacity
Permit/regulatory limits
Resources available –
funding, supplies, etc.



Charlotte Central School, Charlotte, VT;
Red Hook Community Farm, Brooklyn, NY
(photo credit NYC Master Composter
Manual, DSNY)

Tumblers



Jora & Aerobin



Compost Bins



3-Bin System



Photo Cr.: George McDonald, Maine DEP

Windrows

New York City



Images Cr.: David Hurd, GrowNYC

Aerated Static Piles

New York City



Images Cr.: David Hurd, GrowNYC

In-Vessel

The Dirt Factory, University City, PA



Image Cr.: PlanPhily

Site Plan

- ✓ Composting method
- ✓ Be a good neighbor!
- ✓ Safety & fire emergency plan
 - ✓ Security & vandalism concerns
- ✓ Monitoring & record keeping
- ✓ Provisions for controlling odors
- ✓ Contingency plans

Site Plan, cont.

- Year-round accessibility
- Sufficient space for compost system
- Access to a water source is necessary
- Shrubbery, fencing, or cover to block wind
 - ✓ Insulation for winter
 - ✓ Helps block view

Site Inspection
Form

Site Layout

- Material receiving & mixing area
 - ✓ Food scrap drop-off
 - ✓ Carbon storage
- Active composting area
- Curing
- Finished compost

**Go with
the
flow!!**



Image Cr.: NYC Master Composter Manual/DSNY

Site Preparation



Image Cr.: Cassandra Hemenway, CVSWMD



Site Development

Image Cr.: Cassandra Hemenway, CVSWMD

Equipment/Supplies

- Shovel and pitch fork
 - ✓ Or, bobcat/tractor
 - ✓ Trowels for tumblers
- Covered area for carbon storage
- Thermometer
 - ✓ For hot composting



Best Management Practices

Set-Backs

- 3 feet from side lot lines
- 10 feet from the front & back lot lines
- Adequate distance from water sources & water bodies
- Consideration of neighbors

BMPS, cont.

- Operated so as to minimize odors, prevent run-off, and not harbor or attract wildlife
- Screened from view from public & adjacent neighbors using plants, trellis, or fencing
- A neat site appearance is important

Bennington, Vermont

- In town at Rec Center
- Nearby residents
- Highly visible



Montpelier, VT



Jora - Active Composting Step 1



Active Composting Step 2



Buffer area



Water



- Highly visible
- In town neighborhood

Ludlow Community Compost Site

Jora – Active Composting

Signage

3-Bin System

**Food
scrap
collection
bins &
carbon
storage**

- Hidden from public view
- Relatively isolated
- Limited winter access



Fort Community, Burlington



Carbon Storage

**Food
scrap
Tumbler**

**3-Bin
System**

Food Scrap Mixing/Active Composting

**Curing, Screening,
Finished**

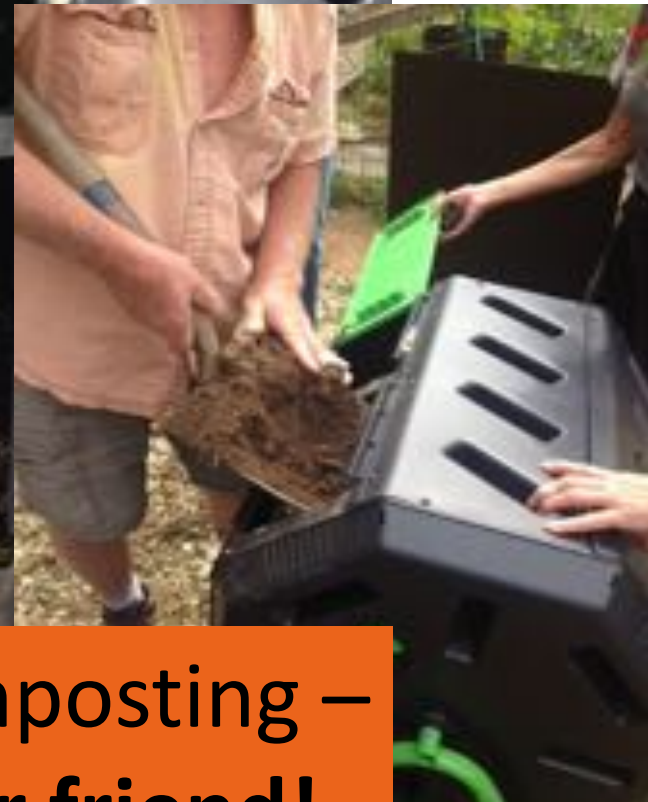
**The Dirt Factory Community Composting
Facility In University City, Pennsylvania**



**PROCESS
MANAGEMENT &
MONITORING**



Filling & Mixing in Tumbler



**Food scrap composting –
Carbon is your friend!**

Mixing Food Scraps in Bins



Food Land Opportunity - Chicago



Nola Greens – New Orleans

Mixing into Windrows



Earth Matters - NYC

Monitoring & Troubleshooting

- *Observation*

- ✓ Are the bins or piles steaming?
- ✓ Are materials looking different?
 - ✓ Is decomposition occurring?
 - ✓ Materials looking like soil?
 - ✓ Is the pile uniformly composting?

Monitoring, cont.

- *Compost feel*
 - ✓ Does the squeeze test indicate that there is moisture in the material
 - ✓ Does it feel like a damp sponge & stick together?
 - ✓ Is the material too wet/slimy?

Monitoring, cont.

- Smell is the best measure of properly aerated composting
- Unpleasant odor – indicative of anaerobic conditions
 - ✓ Pile needs to be turned
 - ✓ Check moisture levels

Monitoring, cont.

- *Temperature monitoring*
 - ✓ Is the temperature rising appropriately for rapid compost?
 - ✓ Does the temperature rise to 90°F
 - ✓ Maintain for PFRP (131°F...ideal)

LOG BOOK

Date	Time	Composter Name(s)	Moisture Rating	Odor Rating	Temp 1	Temp 2	Turned (Y/N)	Other Actions Taken



Quality Assurance

- Observe, monitor, sample, analyze, test
- *Keep accurate compost records*
 - ✓ Track feedstock sources & materials
 - ✓ Track turning frequency, temperature
 - ✓ Track compost phases (Active, Curing)
 - ✓ Odor issues & other problems
- Train the Team!

Tips

- Have an adequate amount of carbon
- Always cover food scraps with carbon (sawdust/shavings) & soil
- Cover with lime if issues with fruit flies & wildlife (rodents, bears)
- Line compost bins with wire mesh

Tips

- Enclose compost area if needed
- Repellents – noise, ammonia soaked rags
- Remove all food sources (bird feeders, trash cans) from area!!
- Stop incorporating food scraps in spring, if necessary

**SUPPORT &
VOLUNTEER
ASSESSMENT**



Community Support

- Effective outreach is key!
- Communicate compost plans with your community, town officials, Board of Health
- Adopt a good neighbor policy
- Engage & act upon complaints & issues



Compost Site Management



- Roles & Tasks
 - ✓ Site Manager(s)
 - ✓ Compost Team/Helpers
- Seek partnerships
- Train all volunteers/staff in compost basics

Compost Site Manager(s)

- Overall management
 - ✓ Ensure proper system maintenance
 - ✓ Source materials as needed, etc.
- Recruit & train team



- Create & know volunteer schedule
 - ✓ Delegate tasks effectively
 - ✓ Ongoing Communication

Compost Team/Helpers

- Monitor feedstock collection
- Provide education & outreach
- Monitor & maintain compost system



Photos: Nneighbor food scrap contributor at La Plaza Cultural, Manhattan, NY

Signage

Food Scraps you can add to the compost bin:



Fruit & vegetable scraps
(remove PLU stickers!)

Egg shells



Dirty unbleached paper napkins & towels



Leftover vegetarian meals



Coffee grounds & unbleached coffee filters



Do NOT add these to the bin:



Meat & fish



Bones

Grease



Dairy products

Diseased plants



Plastic bags, metal, fruit stickers, glass



Greasy food

WELCOME TO LA PLAZA CULTURAL COMPOST SITE



COMPOST INSTRUCTIONS



PLEASE FOLLOW THESE SIMPLE STEPS WHEN COMPOSTING WITH US

1

BEFORE YOU LEAVE YOUR HOUSE
CHOP YOUR FOOD SCRAPS



BETWEEN 1 TO 3 INCHES



2

DUMP YOUR FOOD SCRAPS INSIDE
METAL CAN



PICK THE ONE THAT IS THE
FULLEST

3

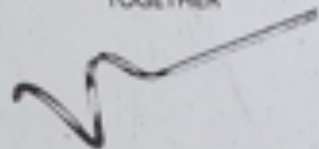
COVER YOUR SCRAPS WITH
BROWNS



BROWNS ARE FOUND IN ADJACENT
PLASTIC BINS

4

MIX SCRAPS AND BROWNS WELL
TOGETHER



MIXER IS HUNG IN FENCE
MAKE MIX FLUFFY

5

TOP WITH A FINE LAYER OF
BROWNS



NO FOOD SHOULD BE EXPOSED

6

REPLACE LIDS ON METAL CAN
AND PLASTIC BIN



ENJOY THE GARDEN!

QUESTIONS? CONTACT US AT 06292900@OWNS.COM

Signage



Down to Earth Community Garden St. Albans, Vermont



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