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Heaps & Windrows

Handling yard waste in the community and at home

COMPOSTING. Derived from the Latin word for "put together" and the Middle English word for "stew." Seems you've heard a lot about this composting business lately on the evening news, mixed in with talk about brush collection schedules. It came up during discussion of the new landfill at last month's county board meeting. And now your neighborhood association needs volunteers for a new composting committee.

A hot topic, composting. Why? Why all the fuss over what amounts to nothing more than a "put-together stew" of discarded plant matter?

Start with smoke: To comply with the 1970 Clean Air Act, many Wisconsin communities restricted the annual backyard ritual of leaf burning. Leaves and brush were picked up for disposal in landfills.

Add a percentage: 30 percent of all household waste is yard waste — grass clippings, leaves, brush, weeds, garden debris. That 30 percent, about 300,000 tons a year, takes up a hefty chunk of space in Wisconsin's landfills.

Combine with a dangerous gas: Yard wastes decomposing in landfills produce methane, a gas that can explode when it accumulates in areas without good ventilation.

MAUREEN MECOZZI

Why is this man smiling? After tossing his yard waste into a bin, he's yielded a bounty of soil-enriching compost—and nature did most of the work.

Incorporate a date: No yard waste can be buried in any Wisconsin landfill after January 1, 1993. This state law was enacted in 1988 to encourage municipalities, businesses and private citizens to take up the composting challenge.

Mix in public opposition to new landfills, rising costs for waste collection services, growing environmental concerns . . . and you've got a boiling stew of reasons why yard waste composting has become an important issue in cities, towns and your own backyard.

In this publication you'll read about the difficulties and triumphs experienced by composting communities around the state. You'll learn how yard wastes can be used on the farm and how compost can be made at home. You'll find out that entrepreneurs have a place in the composting cycle. And best of all, you'll come to realize that composting and recycling yard wastes are simple, easy ways for you to contribute directly to the health and regeneration of a precious natural resource.

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Produced by the Waste Reduction and Recovery Program, DNR Bureau of Solid and Hazardous Waste Management

Printed on recycled paper

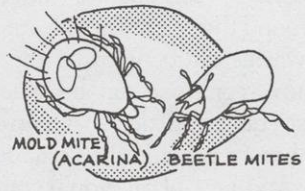
Written by Maureen Mecozzi

Compost/ composting

Compost is decomposed organic matter — leaves, grass, cornstalks and the like. Enormous work crews of microorganisms, bacteria, fungi, insects and earthworms are employed by nature to manufacture this valuable product every day, right beneath your feet.

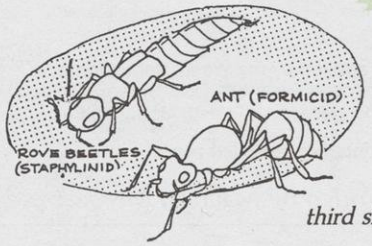
first shift

With bacteria in the lead, the teeming crews break down plant tissue into a crumbly, dark-brown material that's easily worked into the soil. Composted plants and waste add essential plant nutrients to any soil. Compost improves the soil's capacity to hold water and resist erosion. A forest floor is a good place to witness nature's work crews in action — if you've got a few spare years to sit and watch a slow-moving miracle unfold.



second shift

Composting is humanity's attempt to speed up nature's poky decomposition process. By controlling the factors governing the actions of composting organisms — materials, surface area, volume, moisture, aeration, time and temperature — green garbage is turned quickly and economically into brown gold.



third shift

It's homemade!

To compost yard waste at home, you can make a freestanding backyard heap or build a bin to contain your pile. Either way, remove the sod from the area where you want to construct your pile to allow materials direct contact with soil microorganisms.

A properly made heap will reach temperatures of 140-160° F in four to five days. The pile will settle somewhat — a good sign that the heap is working properly.

After five to six weeks, fork the materials into a new pile, turning the outside of the old heap into the center of the new pile. Add water if necessary. You shouldn't need to turn your heap a second time. The compost should be ready to use within three to four months, when it is dark brown, crumbly and earthy-smelling.

LEN POLCZINSKI

Layering grass clippings, leaves and other organic materials to make a compost heap. It's easy to construct a bin from wood, wire, fencing, concrete blocks or a metal or plastic drum.

The Recipe

1st layer: 3-4" chopped brush or other coarse material set on top of the soil surface will let air circulate around the base of the heap.

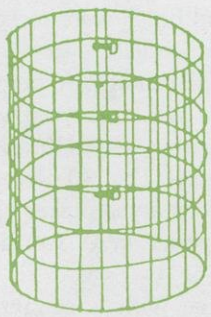
2nd layer: 6-8" leaves, grass clippings, sawdust, raw vegetable scraps, etc. Materials should be damp.

3rd layer: 1" of soil adds microorganisms to the middle of the heap.

4th layer (optional): 2-3" animal manure or lake weeds, or 1 cup of 10-10-10 fertilizer or bloodmeal will provide a "nitrogen boost" to speed the work of the decomposition crew. Add water if the manure is dry.

Repeat layers until the heap is about four feet high or until the bin is almost full. Top off with a 4-6" layer of straw and scoop out a basin at the top to catch rainwater.

As any good cook knows, a recipe is only a guideline. There's room to experiment when you make a batch of compost. Keep the essentials in mind and you'll be successful in making a good batch.



The essentials

Whether composting is done in a small 4′ x 4′ x 4′ heap in the backyard or in a 200′ x 16′ x 8′ municipal windrow (a long pile), the essentials of composting remain the same.

Materials: Anything growing in the yard is potential food for nature's decomposing crews. They're hungry for the carbon and nitrogen in the tissues of dead plants — C for energy, N for protein — and prefer a C:N ratio of 30:1 for hearty snacking. A 50-50 mixture of grass clippings and leaves, for instance, achieves this balance.

Surface area: The more surface area the organisms have to work on, the faster materials decompose. Shredding leaves or chopping garden wastes will hasten composting.

Volume & temperature: Those decomposing crews give off a lot of heat when they're on the job. A large compost pile insulates itself and holds heat better; hot piles decompose quicker. A pile needs to be in the 130-160° F range for optimum decomposition.

Moisture and aeration: Composting organisms need air and water to survive. They work best when the heap or windrow is turned or fluffed to create air passages and is about as moist as a wrung-out sponge.

Time: A pile that's made with materials at the proper C:N ratio and provides adequate surface area, volume, moisture and aeration allows the decomposition crews to work with astonishing speed. Neglect the essentials and the crews still do the job, but at a much slower pace.

Strumming along

How a small town composts in a big way.

DAVID BERGE

A front-end loader is the only piece of machinery necessary to build and turn piles at the Strum composting site. Small communities can start composting with equipment that's already on hand.

In the quiet Trempealeau County village of Strum (pop. 944), the folks like to do things right. No surprise, then, that David Berge, Strum's public works director, designed a simple, inexpensive, flexible, clean and convenient community composting program.

Strum's composting site is close to the community, with easy access and a good road. Residents drop off leaves, grass clippings and brush in clearly marked areas at the site, which is open 24 hours a day, seven days a week and is kept tidy to discourage dumping of other waste. Elderly residents or residents without vehicles can call Berge for curbside pick-up of their yard waste. "We eliminated the hassle so people would be willing to participate," he says.

Berge builds windrows of leaves and grass with a small front-end loader, then invites the local firefighters to wet down the heaps for some practice in hose-handling. He turns the piles when he gets the chance. "I figure it takes about 40 hours a year for me to run the composting program," Berge notes. "That's less than an hour a week, so there was no need to hire a new staff person. The equipment was already on hand. Our only cost is for the fuel to run the front-end loader." When work slows down in the winter, Berge chips brush left at the site for use in city landscaping.

"Composting doesn't have to be expensive, it doesn't have to be complicated," says Berge, "but you do need good public relations to make it work." Strum residents were notified about the program through flyers sent with tax bills. Berge got youth and senior citizen groups involved to promote the benefits of composting. After Halloween, Berge makes the rounds on a special "pumpkin pick-up" — a goodwill gesture generating laughs and interest in composting. The result: Strum has a high level of participation from residents who are rewarded for their effort with free compost.

David Berge offers this advice to other small communities about to begin composting programs: "If it doesn't work, change it. Be flexible with hours and restrictions. You'll find you've got a lot of latitude in designing a program to fit your needs."

How do you spell releaf?

The challenges of composting in the city.

Disposing of yard waste from one yard, not so hard. Disposing of yard waste from a whole city or county of yards (and parks, building grounds, golf courses, cemeteries) — that's a job for Supercomposter, better known as your director of public works.

DPWs in Wisconsin's larger municipalities face extraordinary challenges in handling yard waste. Perhaps the biggest one of all is setting up a program in which residents willingly participate. According to Dan Wilson, UW-Extension resource agent for Washington County, both citizens and local officials should be on the committee planning a composting program: "Everyone's needs and concerns can be aired in the beginning. Without citizen cooperation, it won't fly." (Remember: The ultimate goal of any composting program is to save you money by saving space in your landfill. Your support is vital to its success.)

LANCE GREEN

A public works crew empties bags of leaves and grass to make windrows. Much of this yard waste could have been composted at home.

LEN POLCZINSKI

After turning, wetting and a few months' time, these long windrows of municipal yard waste will become cubic yards of valuable compost.

The major thrust of any big-city program, says Wilson, is to get people to use their yard waste in their own yards. "No reason it should be wasted," he notes. "It's too valuable a natural resource." But how to handle what can't be used at home?

Some cities, like West Bend, Madison and Brookfield, have drop-off sites where residents can bring their extra leaves, grass clippings and brush. (Periodic curbside collections may be made at times of the year when yard waste volume is high.)

In Monroe, grass clippings and leaves are collected for composting on regular weekly garbage days at the curb. At first, Monroe residents were asked to put yard waste in clear bags so pick-up crews could quickly separate grass and leaves from garbage. But the clear bags weren't often available in stores. The Monroe Streets Department found a good compromise: residents leave the tops of bags containing yard waste open and crews can see what's inside.

It's important for cities to be forward-thinking and flexible in setting collection policies, says Wilson. If residents must use special bags, will they be able to purchase them . . . and at a reasonable price? Would residents prefer a Monday pick-up over a Friday pick-up? Are drop-off sites easy to get to and open at convenient hours? Could brush be chipped for residents right at the curb? By offering a combination of options, more people are likely to participate in the program.

Large-scale composting requires space. A city of 3,000-4,000 people needs about one acre of land for its composting site. Communities often locate composting operations at existing landfills, dumps or transfer stations, where equipment is available and water and roads are in place.

At the site, leaves and grass clippings are piled in narrow rows called windrows, usually about six- to eight-feet high by 12- to 14-feet wide and any convenient length. The materials are wetted as the windrows are periodically turned and reshaped to aid

decomposition.

Special high-tech self-propelled compost turners and forced-air windrow ventilating systems make composting easier when a large volume of leaves and grass (the amount collected in a city the size of Chicago, for example) must be handled. But most Wisconsin cities don't need these expensive tools for successful composting. Turning can be done easily with a front-end loader — a piece of equipment almost every Wisconsin municipality owns. Community officials should investigate the possibility of purchasing and sharing yard waste shredders, chippers or tub grinders with other municipal composting programs.

When the composting process is completed after several months, the finished product — valuable compost — is often given away to residents, used in city parks and grounds, or used in combination with fill dirt to cover landfills.

No matter how it's done, pick-up or drop-off, bags or bushel baskets, a strong effort should be made to inform all citizens of yard waste disposal policies. The city of West Bend sent yard waste fact sheets with each resident's tax and water bills; had informational door-hangers distributed to every residence by the Boy Scouts, Girl Scouts and 4-H clubs; ran newspaper announcements and radio spots; aired a composting program on the local cable TV channel; and trained volunteers to give composting slide shows and workshops. When composting came to Fort Atkinson, representatives from local radio stations and newspapers were asked right from the beginning to sit on the information and education committee. The composting program was front-page news for a month and a half; the thorough coverage prepared residents for their role in recycling yard waste.

"It takes time, but you've got to stick to the overall goal of saving landfill space and a natural resource," notes Dan Wilson. "The community eventually will realize that 'it's the right thing to do.' "

Soil salvation

Wisconsin farmers, have you heard the good word about compost?

With a $70 million dollar crop at stake, Wisconsin's ginseng growers are battling against the dread *Phytophthora* — "plant destroyer" — a soilborne fungus that causes the precious roots to rot. Their ally in the war? Compost.

"We were concerned about the huge doses of fungicide required to control *Phytophthora*," says Jennifer Parke, an assistant professor in plant pathology at the University of Wisconsin-Madison. "We had to find an alternative."

MAUREEN MECOZZI

Healthy, friable soil gives Art Peterson cause to smile. Tilling leaves into farm fields builds soil structure.

In research funded by the Sustainable Agriculture program of the Department of Agriculture, Trade and Consumer Protection, Parke has been experimenting with adding different kinds of compost to soil to keep the fungus in check. "There's tremendous biological activity in compost, all kinds of microorganisms," she says. "The microorganisms seem to suppress the pathogen."

As the microscopic compost SWAT teams challenge the fungal reserves below ground, Parke is taking notes up above to find which mixtures perform best. "We've had some success with animal manure composts," she says. "Other researchers have found hardwood bark composts work well."

Says Parke: "The organic matter in compost enriches soil; it adds life, biological diversity. Plants and soil need that diversity to stay healthy."

Leaving, to Art Peterson, soil specialist with the UW-Extension, has nothing to do with saying goodbye. It has everything to do with finding a way for farmers and municipalities to benefit from the annual downward migration of leafy debris each fall.

Peterson began his leavetaking in 1986, when he cast 15 truckloads of the City of Middleton's leaves across a field using a manure spreader. With a rototilling attachment, Peterson incorporated about 20-40 tons of leaves per acre into the soil. "Put 'em on a field that's already been tilled," says Peterson, speaking from experience. "Works better. And it helps if they're shredded first."

Leaves improve soil structure, he says. "Make it spongier, better able to hold water, easier to till, less likely to compact when heavy equipment goes across."

Corn planted in Peterson's experimental plots in 1988 (a dry year) yielded 136 bushels per acre; the average yield from a plot without leaves is 135 bushels. "It's not a major leap, but it's a start," Peterson notes. "The improvement in soil structure was worth the effort." Since leaves add carbon to the soil, Peterson spread nitrogen fertilizer on some of the plots to balance the C:N ratio.

Peterson continues to experiment with different shredding and application methods, seeking ways for farmers to efficiently and economically incorporate a free, plentiful soil amendment into their land. He encourages municipalities and nearby farmers to work together on mutually beneficial leaf disposal methods.

"Keep those leaves out of the landfill," declares Peterson, "and get them in the soil, where they belong."

Waste not...

Roses, freesias, daisies and carnations blossom by the truckload at the distribution center of Felly's Flowers in Madison. These beauties receive a gentle barbering before they're shipped out to Felly's shops and greenhouses; the stems are trimmed and lower foliage removed to promote longevity, which means lovely flowers for customers, and three dumpsters full of waste trimmings each week for Felly's.

Hoping to nip the company's waste hauling bill, employee Brian Myrland and several co-workers constructed four 4′ × 4′ composting bins at the center. "They don't take up much space," notes Brian. "Simple to build, too."

MAUREEN MECOZZI

Brian Myrland checks on the decomposition crews in Felly's compost bins. Businesses have discovered that composting can cut waste hauling costs.

The trimmings are run through a small chipper before they go into the bins, and the piles are sprinkled with bloodmeal, an organic product high in nitrogen, to get a good C:N balance. "The bloodmeal helps keep the piles cooking in winter," Brian says. "And that's important, because our waste is produced year 'round."

Felly's donates most of the compost to enrich flowerbeds in historic Shake Rag Alley in Mineral Point and plans to experiment with the rest in bulb potting mixtures. Although the company has no plans to sell the compost to customers (Myrland says maintaining consistent nutrient and composition levels for a commercial product would be difficult), it does intend to continue composting. "It's kind of a hobby right now," says Myrland, "but when the 1993 landfill ban comes around, we'll be ready."

Felly's is one of many Wisconsin companies discovering that helping to conserve landfill space makes good business sense. What some see as a ban, others view as a boon: Entrepreneurs are eyeing the collection and processing of yard waste as a growth field.

Smart waste contractors know that chipped brush and stumps have value as landscape mulch, farm animal bedding, sludge-bulking agents, industrial furnace fuel and flakeboard material. Shredded or flaked bark makes an attractive, clean mulch sought by professional landscapers and homeowners. Commercial composting is a wide-open area for those willing to do the necessary market research; greenhouses, nurseries, sod farmers and golf courses are potential customers for clean, screened compost. Transporters take note: Trucks will be needed to pick up the "raw" material, bring it to processing centers and move finished products to consumers.

As 1993 approaches, more towns, cities and businesses will be looking for help in handling yard and woody waste. Will enterprising waste entrepreneurs be there to lend a hand?

The wonders of compost!

Miracle mulch! Use compost to suppress weeds, reduce soil erosion, conserve soil moisture, keep soil cool in summer and prevent soil heaving in winter. Apply a 3- to 6-inch layer around the base of annuals, perennials, trees and shrubs.

Perfect in potting soil! Mix one part sterilized compost (a good gardening book will have instructions on how to sterilize) to three parts potting soil and watch those lackluster houseplants thrive.

Superior soil amendment! Compost improves the physical, chemical and biological properties of soil. Dig in one to two inches of compost into the top six to eight inches of soil — about a pound per square foot. It increases the moisture-holding capability of sandy soils, reduces drought damage to plants, improves aeration and drainage in heavy clay soils, eliminates waterlogging of plant roots, reduces crusting of the soil surface, and adds nutrients and microorganisms beneficial to plant growth to the soil. Regular additions of compost make any soil much easier to work — a boon for green thumbs with aching backs.

The lazy person's guide to lawn care

Is it true what your friends say about you — that you'd rather relax and enjoy summer than spend it bagging grass clippings?

You're not alone. More and more people are taking the easy way out when it's time to mow the grass. How? *They leave the clippings right on the lawn.* And still have a lush, green carpet of grass to rival the most meticulously raked turf on the block.

A bag of grass clippings contains about a quarter-pound of usable organic nitrogen. By recycling those clippings into the lawn you'll cut back on fertilizer costs (clippings will provide 50 percent of the nutrient needs of a lawn) and garbage pick-up fees. You'll spend less time doing yard chores and have more time for summer fun. The biggest plus of all? You'll be protecting and enriching the natural environment in your neighborhood and beyond.

To successfully recycle grass clippings back into your lawn:

- mow when the grass is dry and three to four inches tall. Never cut it shorter than two to two and a half inches in height. The grass will develop a larger and deeper root system.
- use a sharp mower blade or a mulching lawn mower. A sharp blade and frequent mowing result in finer clippings that will decompose quickly.
- thatch thicker than a half inch should be removed to allow clippings to reach the soil.
- limit the use of lawn chemicals and don't overfertilize your lawn.

One more thing. If neighbors wrestling with heavy bags of clippings in the hot sun send envious looks over the fence at your lovely lawn (where you are reclining in a lounge chair, cool drink in hand) don't gloat. Invite them over and share the secrets of the lazy person's way to lawn care.

Don't want to compost?

Composting isn't the only way to handle yard waste. If you don't have the space or the inclination to build a compost pile, consider the following to keep yard wastes out of the landfill:

1. Leave grass clippings on the lawn.

2. Rake leaves around the base of trees and shrubs so you won't have to mow grass close to the trunks or roots. Bumps, bruises and accidental cuts caused by careless lawn mower use are the number one killers of trees and shrubs.

3. Build raised planting beds with rocks, bricks or wood. They only have to be a few inches high. Toss shredded or chopped leaves into the beds and let nature do the rest.

MAUREEN MECOZZI

A no-mow lawn of flowers.

4. Use leaves and grass clippings as garden mulch. Shred leaves with a lawn mower to prevent matting. Do not use grass clippings as a mulch if the lawn recently has been treated with herbicides or insecticides.

5. Don't do any raking at all. Simply mow over leaves where they fall and let the shredded matter settle into the lawn.

6. Plant a low-maintenance prairie lawn. Check city ordinances; you may be required to submit a landscape plan.

7. Plant low-grow, no-mow ground covers such as periwinkle or ground ivy in shady spots or heavy-traffic areas.

8. Save woody brush for the fireplace or wood stove.

9. If you have room, make brush piles for wildlife habitat.

10. Find a gardening neighbor who wants your yard waste and give it away!

Wisconsin's composting communities

There are at least 76 community yard waste composting sites in Wisconsin that serve a total of 88 communities. Seventy-one sites are municipally operated and five are privately owned. Another 20 communities send their yard wastes (usually leaves) directly to farmers, tree nurseries or landscaping companies. Six counties have banned yard wastes from county-owned landfills.

If your town or city isn't composting or diverting yard wastes, encourage your public officials to contact one of these communities, preferably one about the same size as yours. Nearby communities may find they can share equipment as well as information.

Workshops for municipal officials interested in starting community composting facilities are offered by UW-Extension and the Department of Natural Resources. For information about future workshops, call Pat Walsh, Extension solid waste specialist at (608) 262-8179, or Kate Cooper, DNR assistant recycling coordinator at (608) 267-7566.

Counties and cities in italics operate their own composting sites.

COUNTY	COMMUNITY
Barron	*Chetek*
Brown	*Allouez,* Ashwaubenon, *De Pere, Green Bay*
Buffalo	*Mondovi*
Calumet	Menasha
Clark	*Owen*
Columbia	*Lodi,* Portage
Dane (county landfill bans yard waste; operates two composting sites)	Fitchburg, Town of Madison, City of Madison, Monona, *Oregon,* McFarland
Dodge	*Juneau*
Door	Sturgeon Bay
Dunn	*Menomonie*
Eau Claire (county landfill bans yard waste in spring and fall)	Altoona, Eau Claire, Fall Creek, Union, Washington
Fond du Lac	Fond du Lac, North Fond du Lac, *Ripon*
Grant	Boscobel, *Lancaster,* Platteville
Green	*Monroe*
Green Lake	*Berlin*
Iowa	*Muscoda*
Jackson	Black River Falls, Brockway
Jefferson	*Fort Atkinson, Jefferson, Johnson Creek, Sullivan, Waterloo, Watertown*
Kenosha	*Kenosha*
Kewaunee (landfill diverts yard waste to farmer)	Algoma, Kewaunee
La Crosse	*Bangor, Holmen,* West Salem
Langlade	*Antigo*
Lincoln	*Merrill,* Tomahawk
Manitowoc	*Chilton, Whitelaw*
Marathon	Wausau
Marinette (county landfill bans yard waste)	*Niagara, Peshtigo*
Milwaukee	*Bayside, Milwaukee, City of Milwaukee Forestry Department, Oak Creek, Wauwatosa, West Allis*
Monroe	*Sparta, Tomah*
Oconto	Oconto
Outagamie (county landfill bans yard waste)	Appleton, Combined Locks, Kaukauna, Kimberly, Little Chute, *New London,* Seymour
Ozaukee	City of Cedarburg, *Town of Cedarburg, Mequon, Thiensville*
Pierce	*River Falls*
Portage (ban on yard waste in county landfill proposed for June 1989)	Hull
Racine	Racine
Richland	*Mirror Lake State Park*
Rock	Town of Beloit, City of Beloit
St. Croix	*Baldwin, Glenwood City, Hudson*
Sauk (county landfill bans yard waste)	*Baraboo,* Prairie du Sac, *Sauk City*
Shawano	*Shawano*
Sheboygan	Sheboygan
Trempealeau	*Ettrick, Galesville, Strum*
Vernon	*Viroqua, Westby*
Walworth	*Burlington*
Washburn	*Town of Minong, Village of Minong*
Washington	*Jackson,* West Bend
Waukesha	*Brookfield, Ottawa, Waukesha*
Waupaca	Clintonville, *Weyauwega*
Waushara	*Wild Rose*
Winnebago (county landfill bans yard waste)	*Omro, Oshkosh,* Neenah, Winneconne

Read all about it!

Books and pamphlets to raise your composting IQ.

Send a self-addressed, stamped, business-sized envelope to Kate Cooper, Wisconsin Department of Natural Resources, Bureau of Solid Waste Management, Box 7921, Madison WI 53707 for free copies of the following publications:

"Home Composting: Reap a heap of benefits," publication no. SW-072 87.

"Grass Clippings: Good as gold in your lawn," publication no. SW-073 87.

"Municipal Yard Waste Composting: A handbook for Wisconsin communities" can be ordered from Al Czecholinski, Dane County Public Works, Room 519, 210 Martin Luther King Jr. Blvd., Madison WI 53709.

For a copy of "Composting and Mulching: A guide to managing organic yard waste," send 50 cents to Minnesota Extension Service Distribution Center, Coffey Hall, 1420 Eckles Ave., St. Paul MN 55108.

These books cover composting in detail. Ask for them at your local library:

Let it Rot! The Gardener's Guide to Composting by Stu Campbell, Garden Way Publications, 1975.

The Rodale Guide to Composting by Jerry Minnich and Marjorie Hunt, Rodale Press, 1979.