ORGANICS MANAGEMENT

Participants will learn:

- How and why to manage organic waste.
- What can be composted in your backyard bin vs. your curbside bin.
- How to make a backyard compost bin or a worm compost bin.
- Where to go for more information on the best organics management method for you.

Why Manage Organics?

Why throw our food waste and food-soiled, non-recyclable paper (hereafter referred to as "organics") into a landfill where the valuable nutrients provide no value? There are several options for residents and organizations to manage their organic waste more effectively.

It is estimated that organics such as food waste and non-recyclable paper represent almost 1/4 of the weekly residential single-family waste stream. Eliminating organics from the waste stream also eliminates the odor coming from your trash bin. Organic management methods, such as composting and using compost in your lawn and garden, replenish valuable nutrients in soil and aid in creating healthy, hearty soils that allow plants to flourish. Learn what you can do individually or as an organization to start managing your organics and reducing your waste stream.

How to Manage Organics:

There are many options throughout the Twin Cities metropolitan area for people to manage food waste. Depending on where you live and how much organic waste you generate, options include:

- Food-to-people
- Food-to-hogs
- Backyard or community composting
- Vermicomposting (composting with worms)
- Curbside collection of organics
- Organics drop-offs

Contact your county to discuss options that would work best for you or your organization.

With soil in the US eroding 17 times faster than it naturally forms, composting helps rejuvenate soil nutrients, helps soil retain water, and reduces, if not eliminates, the need for commercial fertilizers, allowing us to grow healthier food.

• Maine Bureau of Land & Water Quality

Homeowners--not farmers--are the biggest consumers of pesticides and herbicides. Using compost instead of chemicals helps soil quality and prevents runoff of potentiall harmful chemicals

• Minnesota Pollution Control Agency

How to Manage Organic Waste

Six ways to reduce waste

www.rethinkrecycling.com/residents/compost

1. Food-to-People
Edible food should be eaten! Plan ahead, bring take-home containers and send leftover food home with guests. Deliver larger quantities of leftover food from your gathering to a food shelter. Take pride in your willingness to keep leftover food from becoming waste.

2. Food-to-Hogs
If your organization continuously has leftover food or food scraps, consider participating in a food-to-hogs program. Leftover food waste and food scraps can all go into one container that will be picked up by a hog farmer who will use your leftovers to feed the animals. Barthold's Farms runs the largest food-to-hog program in Minnesota. By using your leftovers to feed the pigs, less demand is put on cash crops such as corn and wheat.

3. Backyard Composting
Backyard composting can be done by anyone with a yard or property space for a container. Pre-made containers can be purchased, or you can make your own. Cities, counties, nurseries, and many other organizations have compost bin sales every year. Contact your county for more information on upcoming spring sales. Many home improvement stores and lawn and garden stores also offer these bins year round. See the Print Resources at the end of the toolkit for fact sheets on how you can start backyard composting at your home, community garden, or organization.

4. Vermicomposting
Most people believe that living in an apartment hinders options for composting at home. This is not true; people without a yard can still compost inside their home. Vermicomposting – composting with worms – can be done anywhere!

Worm compost bins come in all shapes and sizes. Anything from an ice cream pail to a plastic storage tub can be made to work, or you can purchase a genuine worm compost bin. Refer to the "How to Compost with Worms" handout at the end of this toolkit to learn how to begin composting with worms.

Worms can process the equivalent of their own weight in waste every day.

5. Curbside Collection
Contact your waste service provider (hauler) for more information on availability of curbside yard waste and/or curbside organics collection in your area. Curbside collection is an option for residents, organizations and businesses, depending on your hauler.

Materials collected through these programs go to commercial compost facilities. Because these facilities receive significantly higher volumes of material, their compost piles reach and maintain higher temperatures for longer than a backyard compost bin and can accept more materials than what are suggested for backyard bins. Some of these additional materials include: dairy products, meat, and bones.

6. Yard Waste Drop-off:
Yard waste drop-off locations have existed for decades. Contact your county to find a location near you.

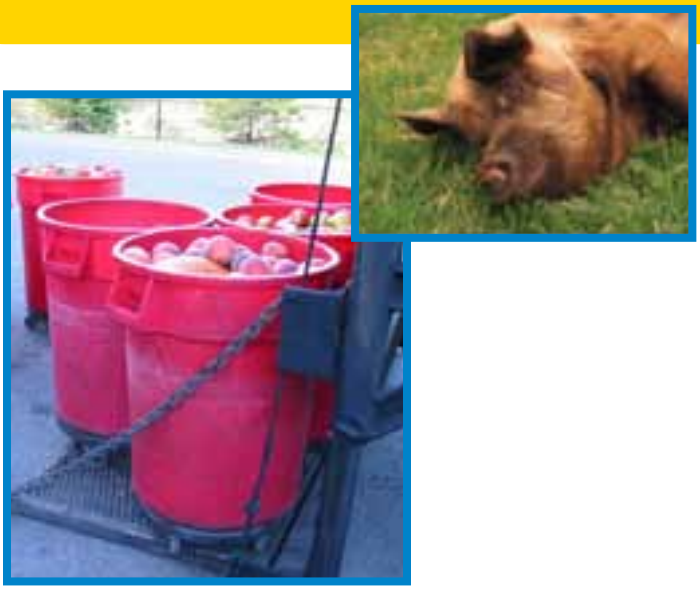
Organics Management Success Stories

School Organics Program

More than half of Minneapolis Public Schools are now collecting and recycling their organic waste with their R.O.T. ("Reduce Our Trash") Program. R.O.T. also represents their bin labeling system: Recycle, Organics, Trash. The District is diverting 33 tons of organics material each month. With the additional waste diverted from their organics program, some of the schools are recycling more than 50% of their waste!

Food-to-Hogs

Schools in the St. Francis School District have recycled 1.3 million pounds of food waste since 2002 through their food-to-hogs program. The program's greatest success is teaching students that their food waste is not garbage, but a valuable resource.



Community Composting

Residents participating in the District II Community Council's gardening program, under the tutelage of a Ramsey County Master Gardner, learned how to use garden and kitchen waste to augment soils. Three of four community gardens have been enhanced with a communal composting site.

Organics Management Activities

Organics Management Activity #1

Recognize the problem!

Collect your food waste separate from your garbage for one week.

Start with a fresh garbage bag and a container with a lid for your food waste. You could also add a separate container for your non-recyclable paper, and of course keep your recycling the way it is. For one week keep all food and plant waste in the container with a lid. Either place your non-recyclable paper into a paper bag or add it in with your food waste. Reminder: Don't forget about your facial tissues, cotton swabs, and paper towels – they're compostable too!

Observe how little garbage you create each week when you pull out all the organic materials along with your recyclables. Notice how your garbage doesn't smell? Notice how easy the initial separation was to do? From here, check your options. Contact your waste hauler to see if they provide organics collection. Based on what you observed throughout this trial week, you may be able to reduce the overall cost of waste services at your home by adding organics pickup and decreasing the size of your garbage container. Even more impressive, by removing all the organics (the smelly stuff), you may wait twice as long or even longer to take out your garbage.

If your hauler does not offer organics service, consider delivering organics to a drop-off location, or start vermicomposting or composting in your backyard. Use the fact sheets at the end of this toolkit on starting worm compost bins or backyard composting.

Organics Management Activity #2

Edible Compost Pile

Have kids make their own edible compost. Ask who knows what composting is. Explain how we can turn leaves, grass, and other vegetation into compost that helps our plants grow.

Give each kid a clear – preferably compostable – plastic cup and a spoon. That will be their compost bin. Ask them what types of things they might compost at home (grass, leaves, coffee grounds, banana peels, old vegetable scraps, etc.) and then show them all the fun "compostable" treats they'll get to put into their compost cup.

Start with some chocolate pudding to represent the finished compost. It will work best to scoop a small amount of pudding into cups at the beginning of the activity, then have an adult help each child scoop up "compostables" into their compost bin as they walk through the line.

Compostable items to add:

- **Life cereal (leaves)**
- **Oreos (coffee grounds)**
- **M&M's (old veggies)**
- **Marshmallows (banana peels)**
- **Granola (grass and garden clippings)**
- **Gummy worms**

Get creative and see what other fun food items make good "compostables" for your treat!

Finally, add in gummy bugs/worms and talk about how microorganisms break down the organics into "dirt."

Have them stir it up to represent how you should stir your compost to get a good finished product. Time to eat!

Organics Management Activity #3

Backyard Composting

- Start composting indoors (see attached sheet)
- Start composting in your backyard (see attached sheet)
- Run tests in your backyard compost bin

—Determine the best feedstock

—Determine the best mixing technique

—Track the degradation of a paper cup or other compostable products. Test one full cup and one ripped up cup. Note the difference in time it takes to degrade.

- Using your finished compost from your backyard bin, use yogurt cups to plant a series of seeds. Plant seeds in standard potting soil, plant seeds in a half potting soil, half compost mix, and plant seeds in 100% compost. Label each container ap propriately, give each the same amount of water and sunlight, and see what happens!

Compost in Your Backyard Bin:

- Fruit and vegetable scraps
- Plant trimmings (no diseased plants)
- Leaves and grass clippings
- Straw
- Acorns
- Coffee grounds and filters
- Rinsed egg shells

Do NOT Compost in Your Backyard Bin:

- Dairy products
- Fats and oils
- Meat or bones
- Pet waste
- Whole eggs

These items cannot be composted in your backyard because your pile cannot get hot enough and retain that heat for long enough to ensure all bacteria are properly broken down. In commercial composting facilities, the items listed above, with the exception of pet waste, can be composted. The volumes of materials received at commercial composting facilities and processing techniques ensure the piles stay hot enough for long enough to reduce pathogens within the compost piles.

A Recipe for Good Clean Dirt: Backyard composting is similar to making a recipe. It may take some time, but you need to tailor your recipe (materials added, turning frequency, etc.) to effectively compost your waste.

For more information or troubleshooting ideas for backyard composting, view the handouts at the end of this section.

Where to Get More Information

Curbside Collection/Drop-off:
If delivering yard waste – including grass, leaves, brush, and plant and tree trimmings – to a local yard waste drop-off, compostable bags are not required. However, most sites will make you debag the yard waste and take the bags home with you.

If you choose to use bags for collecting your yard waste and organics for curbside collection in the Twin Cities metropolitan area, paper bags or certified compostable bags are required for pick up unless you use a cart. Yard waste and/or organics placed in a standard black or white plastic bag will not be collected. Use paper bags or look for this logo to identify certified compostable plastic bags that can be used for collection of your yard waste.

Print Resources:

- **From the Minnesota Pollution Control Agency**

—How To Compost Your Organic Waste*
—Diagnosing Common Backyard Composting Problems*
—Compost Your Food Scraps Indoors (Worm Composting)*
—How To Grow A Healthy, No-Waste Lawn and Garden*
—Reduce The Need For Pesticides and Herbicides*

Online Resources:

- **RethinkRecycling.com**
  Composting Information for Residents
- **www.reduce.org**

Request literature by e-mail:
resourcecenter.pca@state.mn.us
or call 651-757-2120.

PDF versions can also be downloaded from the MPCA's website.

**Attached at the end of this Toolkit.*

How to compost
your organic waste

Home composting is an easy way to turn much of the waste from your yard and kitchen into a rich material that you can use to improve your soil.

Composting: Break it down

1. 
Make a compost bin — or buy one.

2. 
Throw in your kitchen scraps and yard waste.

3. 
Mix it up with a shovel or pitchfork once in a while.

More details on back

Why compost?

Home composting is a way for you to speed up the natural process of decomposition and return organic materials to the soil. Yard trimmings and food scraps make up nearly 1/6 of what the average household throws into the garbage.

Why throw this stuff away when it could be used in your yard and garden? By composting, you can convert organic wastes — yard trimmings, leaves and many kinds of kitchen scraps — into a dark, crumbly mixture that can be used to improve the soil and reduce your use of fertilizer and water.

Composting Biology 101

Like a simple recipe, your compost pile needs the right mix of ingredients in order to produce the best results. The key materials are nitrogen-rich "greens," carbon-rich "browns," water, and air.


Greens

Greens provide nitrogen, and act as a source of protein for the microbes. Examples of greens are green leaves, coffee grounds, tea bags, plant trimmings, raw fruit and vegetable scraps, and grass clippings.

Browns are a source of carbon, and provide energy for the microbes. Examples of browns are straw, sawdust, twigs, dried grasses, weeds and leaves, and shredded newspaper.


Browns

Like all living things, the microbes in your compost pile need water and air to live. Water allows the microbes in your compost pile to grow and travel around in the pile to decompose materials. Turning your pile each week with a spade or pitchfork will provide air to aid decomposition and control odors.

1. Begin with the bin

Location, location, location. Pick a spot in your yard that's at least partially shaded and at least 2 feet from a structure like your house or a fence. Other considerations:

- Convenient for you to add materials
- Access to water
- Good drainage
- Local laws might restrict where or what you can compost. Contact your city or county solid waste office.

Containers. You can compost in a simple pile, but using a container or bin helps your compost pile retain heat and moisture and look neat. To get started, it's easy to go with a single-bin system. As materials are added and mixed together, the finished compost settles to the bottom of the bin.

Materials. Bins can be built from scrap lumber, old pallets, snow fence, chicken wire, or concrete blocks. Typically, several types of composting bins are sold at hardware or lawn and garden stores.

Chicken wire (or hardware cloth) and old wooden pallets make the basis for two easy-to-build compost bins.

2. Adding the first materials

Lay a base. Start with a layer of browns, laying down 4 to 6 inches of twigs or other coarse carbons on the bottom of the pile for good air circulation.

Alternate greens and browns. Add layers of nitrogen and carbon materials. Make layers about 4 to 6 inches thick. Once you turn the pile the first time, these materials will get mixed together and compost more efficiently.

Water as you go. Your compost pile should be moist, kind of like a wrung-out sponge. Squeeze a handful of compost; if small beads of water appear between your fingers, you have enough water.

Your pile will get water from rain, as well as the moisture in the greens. If the pile gets too wet, you can turn it more frequently to dry it, or add more dry brown materials to soak up the excess moisture.

Common problems & solutions

The pile doesn't heat up.
If the pile is new, you may need to add more "green" to your pile. No heat could also signal a need to wet the pile.

If your pile is old, and you've turned it a few times, you may already have finished compost.

There's an odor of ammonia.
If the pile is too wet, turn the pile with a shovel or pitchfork to let in air and mix it up.

Add "brown" to your compost pile. Ammonia odors often indicate too much "green."

The pile is attracting scavengers like raccoons and mice.
Add no food wastes with oils, meats or dairy. The odors from these can attract pests. Keep other food wastes covered and in the middle of the pile Covering the bin might help.

3. Turn it, turn it, turn it

Once you build your pile, the *real* composters get to work — bacteria, fungi, and insects help break down the materials in your compost bin. As the organic materials decompose, your pile will get hot on the inside and you might see some steam. In about a week, your compost will be ready for turning.

Use a pitchfork or shovel to mix up the layers of green and brown and move materials toward the center of the pile. You can empty your bin and re-layer, or just work materials around inside the bin. Break up clumps of material and wet the pile as needed.

Repeat until it's complete.
The composting process can be pretty quick in the summer months. Your compost pile may no longer heat up after just a few weeks. Look in your pile for finished compost — material that is dark and crumbly, fresh-smelling, and no longer looks like what you originally put into your bin.

Using finished compost

- Mix in compost to improve soil. In sandy soils, compost acts like a sponge, retaining water and nutrients where it can be reached by plant roots. In clay soils, compost makes the ground more porous, creating tiny holes and passageways that help soil drain more quickly.
- Spread compost on your lawn to help fill in low spots.
- Use as a mulch for landscaping and garden plants. Mulches cover the soil around plants, protecting the soil from erosion and the drying effects of wind and sun.

- Mix compost into pots for potted plants.

*Visit **reduce.org** for more information on composting, including tutorials, plans for building your own compost bin, and links to composting web sites.*

Minnesota Pollution Control Agency

800-877-6300
www.pca.state.mn.us

July 2007

Diagnosing common backyard composting problems

Does your compost pile smell?
Does it take forever to break down?
Here are some solutions to these and other common backyard composting problems.

Check for moisture

One of the most common reasons a backyard compost pile works slowly or even stops composting is lack of moisture.

The easiest way to check for proper moisture conditions in your compost bin is to randomly grab a handful of composting materials from the pile or bin. Make a fist with your hand and squeeze. One of three things will happen:

- You have **water running** between your fingers. The material is too moist, and you need to turn the pile until it dries out.
- You have **beads of moisture** form between your fingers. The moisture level is just right. No additional care is needed.
- You have **no moisture** between your fingers. You need to add water.

Mix the pile well and repeat the fist test as necessary. This is not recommended if your feedstock is manures or contains food scraps.

Recipes

Backyard composting is most appropriate for those who have a large quantity of organic material—typically yard wastes or fruit and vegetable scraps from the kitchen—and have a space outside large enough to accommodate the volume.

Like any simple recipe, you'll get the best results if you use the right mix of ingredients to make your compost. The key materials are nitrogen-rich "greens," carbon-rich "browns," water, and air.

Yard waste only
3 parts dry leaves
2 parts fresh grass clippings

Yard and kitchen waste
3 parts dry leaves
1 part fresh grass clippings
1 part food scraps

Common Backyard Compost Problems

Symptom	Problem	Solution
Rotten egg smell	Not enough air due to compaction	Turn pile to fluff up and create air pockets. If particle size is small (under one inch), add a bulking agent such as wood chips about 2" in size.
	Excessive moisture: During fist test, if water drips or runs out of your hand, the pile is too wet.	Turn pile to add air and dry out pile. Wood chips or some other bulking agent could be added to increase air space.
Ammonia smell	Excess nitrogen (grass clippings, food waste, fertilizer)	Add more carbon materials (leaves, non-recyclable paper, straw).
Pile doesn't heat up	Pile too small	In order to get the compost pile hot, it must be a minimum of 3' high by 3' in circumference.
	Pile too dry—**the most common problem.** Using the fist test, if you do not see beads of water between your fingers, the pile is too dry	Turn pile to mix materials. While turning the pile, add water with a hose or watering container. You should let the pile rest for several hours, then give it the fist test again. If beads of water do not form between your fingers, the pile is still too dry and more water is needed.
	Lack of nitrogen	Add materials containing nitrogen (grass clippings, food) or a plant fertilizer high in nitrogen.
	Poor aeration	Turn pile. Course materials, such as wood chips, may also be added to create air spaces in the pile.
	Cold weather	If the compost pile is small, it may not be able to heat up in areas that have very cold climates.
	Compost is finished	When appropriate, begin using finished compost in garden.
Attracts rodents or other animals	Inappropriate materials	Materials such as meats, oils, fat, foods cooked in oils or fats, bones, and dairy should not be added to the compost pile.
	Kitchen food scraps too close to surface of pile	Bury kitchen scraps beneath several inches of high-carbon materials (leaves, straw, wood chips).
Attracts insects, millipedes, slugs, etc.	This is normal	To minimize insect problem, turn the outside edges of the pile into the center and make sure the pile heats up. This will kill the eggs laid by the insects and reduce the nuisance insects.

Resources

Backyard Composting Tutorial (Sarasota County, Florida): excellent 20-minute tutorial that teaches you the details about composting; www.compostinfo.com

Backyard Composting: Stewardship Gardening, a service of Washington State University. http://gardening.wsu.edu

U.S. Composting Council: Links to composting resources of all kinds. www.compostingcouncil.org

University of Minnesota Extension, *Composting and Mulching: A Guide to Managing Organic Yard Waste.* www.extension.umn.edu

Earth Kind: Environmental Stewardship Program through Texas Cooperative Extension, Don't Bag It Leaf Management. http://earthkind.tamu.edu/EKHome.html

Cornell Waste Management Institute: Small Scale or Backyard Composting. http://cwmi.css.cornell.edu

Compost Guide: A Complete Guide to Composting. www.compostguide.com

Backyard Compost (New Mexico State University, College of Agriculture and Home Economics). http://cahe.nmsu.edu/pubs/_h/H-110.pdf

Minnesota Pollution Control Agency
800-877-6300
www.pca.state.mn.us

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Compost your food scraps indoors

Use red wiggler worms to recycle food waste indoors with minimal space and no bad odor.

- Red wiggler worms are very effective at composting kitchen food scraps. They reproduce quickly and are easy to maintain.
- They are perfect for homes, townhomes and apartment dwellers because they take up little space.
- Use the nutrient rich worm compost, or castings, on your plants and in your garden.

Set up your bin

A bin specially designed for vermiculture can be purchased online, or you can make your own.

Make your own bin: Purchase two opaque nesting storage bins, approximately eight inches deep by 16 inches wide by two feet long. Drill holes in the bottom of the inside bin, using a 1/4 to 3/8 inch drill bit. This allows liquids (worm juice) generated in the composting process to drip into the bottom bin. Drill air holes in the lid of the top container or along the sides of the inside container about one inch above the bottom bin.

Bedding: Common materials are: peat moss, shredded paper or newspaper, and leaves. Don't use paper with colored inks—it may contain toxic metals. A mix of bedding materials will provide a richer source of nutrition for the worms. A handful of dirt or sand may be added to the bedding to help the worm's digestion.

Worms like dark, moist conditions. Dampen the bedding by adding water a little at a time. Check the moisture of the bedding by taking a handful of material in your fist and squeeze; you shouldn't be able to squeeze out more than a drop or two of water. If bedding becomes too wet, you may experience odor problems. Add dry paper to soak up excess water. Keeping the bedding damp provides good living conditions for the red wigglers and prevent pests.

How many worms do you need?

For every half-pound of food you collect, you need one pound of worms. To save money you can purchase one pound of red worms (Eisenia fetida), begin feeding one-half pound of food per week and gradually increase the amount of food you put into the bin. The worms will increase in number to match the amount of food put into the bin.

Where to purchase red worms
(Eisenia fetida)

- www.wormwoman.com
- www.redwigglerworms.com
- www.workingworms.com
- www.gardenworms.com

Add food waste and worms

Collect food scraps three or four days before you are ready to begin worm composting. This gives the food time to start to decompose so the worms will be able to eat it quicker. Store scraps in a sealed container to avoid attracting flies or pests. Refrigerate if needed.

Add food waste and worms: Dig a hole in the bedding with a hand trowel or rake, place the food then the worms in the hole and cover with bedding

Acceptable materials

- uncooked fruit, grain, or vegetables
- coffee grounds and tea bags (not too much)

Materials to avoid

- meat, fish and other animal products
- dairy products
- egg shells
- greasy or fried foods
- pet waste

Care and feeding of your worms

Place the bin in an area where the temperature stays between 50 to 75 degrees F. They will not survive winter temperatures, so an unheated garage or outside will not work. The closet, under the kitchen sink, or basement are perfect locations for the bin.

Each time you feed the worms create a different hole. The worms will migrate to the food.

Worms do not like to be disturbed, so add food scraps to the bin once or twice a week.

Tips for taking care of your worms

- Only add enough food for the worms to eat. Overfeeding may cause odors or fruit flies.
- Cutting up the food scraps will speed up the process (not too much).
- Fluff up the soil to make sure it doesn't get too compacted—it will maximize air exchange and movement for the red wigglers.

Harvesting the worm compost (castings) and liquid

Worms work quickly. In two to four months, you should notice a build-up of dark, rich material, or castings. Around six months, you will need to harvest the worm castings.

Harvest castings by shifting everything in the bin to one side. Place new bedding on the other side and bury food in the new bedding. Continue to feed the worms only on this side.

In about two weeks, the worms will have migrated to the new side. Collect the castings from the other side and add bedding. Continue harvesting one side at a time.

A silty liquid will collect in your bottom bin after a while. Use a piece of cheese cloth to strain out the silty materials. Reserve the liquid in a container and mark the container clearly.

Using the worm castings and juice

Use the castings to top-dress indoor or outdoor plants or as part of a mix for potted plants. Worm castings are a potent source of nutrients for your plants—use them sparingly, about one handful of worm castings to ten handfuls of soil.

Top-dress the silty material on indoor and outdoor plants.

The remaining liquid, or "worm juice," is a strong fertilizer that should be diluted 20:1 prior to use. The liquid may be used to water your garden, indoor or outdoor plants, flowers, shrubs or trees. Worm juice may have anti-fungal properties that can prevent fungal diseases, such as black spot, when sprayed on plant foliage.

If not you, who?

How to grow a healthy, no-waste Lawn & Garden

Caring for all the green and growing things in your yard can have a big effect on how much waste your household creates. From grass trimmings and leaves to pesticides and water, the eco-impact of your lawn and garden can be significant. But it doesn't have to be.

Your lawn and garden's effect on the environment

Lawns and gardens can create a lot of waste and pollution. Organic material, which includes lawn clippings, leaves, and food waste accounts for a significant portion of waste that cities need to manage. Collection and processing takes energy and money. (Yard waste has been banned from landfills in Minnesota since 1992.)

Fertilizers with high phosphorus and nitrogen levels can pollute local watersheds and degrade nearby lakes, streams, wetlands, and rivers. Excess phosporus and nitrogen promote too much weed and algae growth, choking out fish life and reducing water clarity.

Homeowners — and not farmers — are the biggest consumers of pesticides and herbicides. When overused or misapplied, these chemicals can pose serious risks to animals and people, especially children. They can also kill beneficial earthworms and organisms, disrupting the ecological balance of your lawn.

What can I do?

A healthy lawn and garden is the best way to combat weeds and pests. Over-dependence on fertilizers and pesticides may be a symptom of an underlying problem in your lawn and garden.

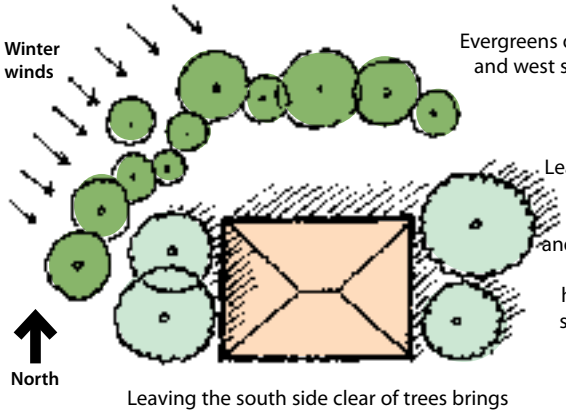
Growing plants that are appropriate for your soil type, amount of rainfall, and sun exposure greatly decreases the need for fertilizers and pesticides. Native plants often require less water, fertilizer, and pesticides.

Also consider growing plants that can provide habitat, food, water, and shelter to birds and other wildlife.

Planting trees

Your landscaping can also affect your home's energy use. For example, planting shade trees on the east and west sides of the house will keep your home cooler in the summer. Planting a windscreen of evergreens on the northwest side of the house will block winter winds, keeping your home warmer in the winter.

A tree-planting plan that saves energy and adds comfort



Compost yard waste and other organics

Composting is nature's way of recycling. Organic materials such as leaves and grass are broken down by bacteria and other organisms to provide nutrients and structure to the soil. Composting provides a free soil amendment that you can use to keep your lawn and garden healthy.

How to: Composting can be done in a free-standing pile or a container—homemade or store-bought—which can be made from wire, bricks, or wood. It should be at least three feet deep and three feet in diameter. Add equal parts of carbon (brown materials) and nitrogen (green materials) to your bin. Brown materials can be leaves, straw, cornstalks and sawdust. Green materials can be grass clippings, fruit and vegetable scraps, and trimmings from your garden. Turn your compost frequently to get the pile to decompose quickly and with little odor. Do not add meat, fats, oils, dairy products, or pet feces. Keep your compost moist, like a damp sponge.

Tips for a no-waste lawn & garden

Mow, fertilize, water, and rake less

You don't have to spend so much time maintaining your lawn. Sound incredible? Mowing your yard less, watering it less, fertilizing it less, raking it less, and using no pesticides may be your way to a healthy, environmentally friendly lawn.

▸ Mow only enough to keep your grass length to 2½-3 inches high. Mowing your grass to the proper height is the single most important thing you can do to improve the health of your lawn. When you mow, don't rake clippings — leave them on the lawn instead. However, be sure to sweep up your sidewalk, driveway, or street so clippings don't pollute nearby lakes or streams.

▸ Get your soil tested to determine the right mix of fertilizer for your lawn. You may need less than you think.

▸ Water only when it hasn't rained for seven days and only water in the early morning hours before 10 a.m. Grasses naturally grow slower in the summer so brown grass usually means it's just dormant, not dead.

▸ A weed-free lawn is not necessarily a healthy lawn. Weeds can tell you something about what's wrong with your lawn. Identifying your weeds and treating them accordingly can strengthen the health of your lawn.

Benefits: Take time today to figure out exactly what your lawn needs to keep healthy. This will decrease the amount of time and money you will have to spend caring for it tomorrow. By keeping your grass length longer, the roots of your grass are deeper and can reach more water during dry periods making it less necessary to water. Longer grass also creates more shade and makes it harder for weeds to get established. By leaving your clippings on the lawn, you will fertilize your grass throughout the summer. Controlling weeds by interrupting the cycle of seed production (either by digging them up or cutting off flowering stalks) makes it harder for them to get established in your lawn.

Get your soil tested

All soils are not created equal. Find out what your lawn needs before applying "just any old" fertilizer.

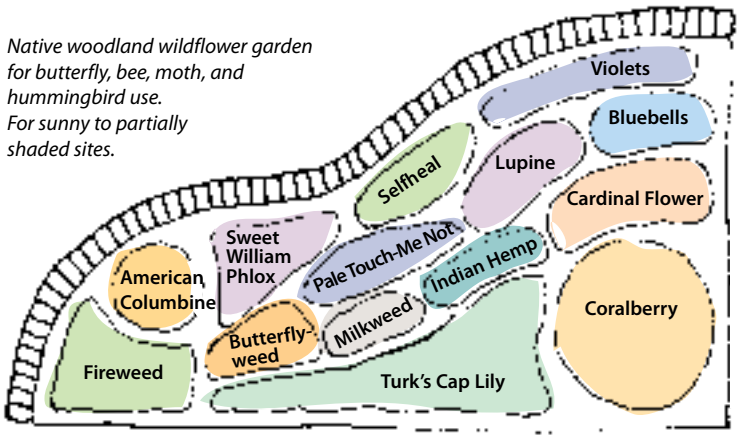
1. Call the University of Minnesota Extension Service at 612-625-3101.
2. Tell them you want to have your soil tested.
3. They will mail you a form to fill out and a bag for the soil sample.
4. You collect the soil sample and mail it to St. Paul along with the form and payment (a regular soil test is $15).
5. The results are mailed back to you in about 10 days.

The Extension Service also gets a copy so that they can help you interpret them.

Source: University of Minnesota Extension Service.

Benefits: Backyard composting reduces the amount of waste you create in your yard and kitchen by converting it into a useable soil amendment. Composting saves you time — no more bagging and hauling leaves and grass clippings to the county compost site, or paying your garbage hauler to pick up your yard waste. In Minnesota, it is illegal to mix your yard waste with trash. Adding compost to the soil increases its organic matter, which in turn enhances the soil's ability to hold nutrients and water. Using compost in your lawn and garden reduces dependence on fertilizers. Compost can also make good mulch for new plants.

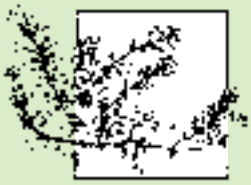
Native woodland wildflower garden for butterfly, bee, moth, and hummingbird use. For sunny to partially shaded sites.



Source: Minnesota DNR

What your weeds are telling you.

- **Plantain** may indicate the soil is compacted or poorly drained.



- **Creeping Charlie** may indicate the site is too shady or the soil is poorly drained.

- **Hawkweed** may indicate that the soil is low in nutrients.

- **Dandelions** may indicate that the grass is too thin.

- **Moss** may indicate that the site is too shady or too wet for grass to survive.

Source: The Green Thumb Project sponsored by the Western Lake Superior Sanitary District Zero Discharge Project.

Garden and landscape to encourage wildlife and shade

Your garden and landscape can provide habitat for birds and butterflies as well as save energy. When you plant the right plants given your site, soil type and rainfall, you reduce the amount of pesticides, fertilizer, and water used in your garden. Native Minnesota plants often require less water and fertilizer. The types and location of trees in your yard can reduce heating and cooling costs.

Examples: Get to know your garden site. For example, how long is it exposed to sunlight? What is the soil type? Does the soil hold moisture? What will you keep and what will you take out? How will your plants influence wild native plants, or be influenced by nearby weedy exotics? Once you've answered these questions, you can plant your garden and landscaping to fit your needs and budget. When planting native plants, remember that

continued on back

your garden may take a few years to establish since these plants tend to grow slower.

You can save energy in your home by planting trees for shade on the west and east windows, avoiding trees south of windows. Plant shorter, denser trees, such as firs, to create wind breaks.

Benefits: Healthy plants in your garden and landscape create less waste and need less chemicals and water. Planting plants that are native or work well in the conditions of your garden site will reduce the need for fertilizers and pesticides; and you won't have to water as often. Trees planted to reduce energy use in your home are an added bonus.

Greener Growing

Integrated pest management (IPM) is an ecosystem-based strategy that focuses on long-term prevention of pests or their damage through a combination of techniques such as biological control, habitat manipulation, modification of cultural practices, and use of resistant varieties. Pesticides are used only after monitoring indicates they are needed according to established guidelines, and treatments are made with the goal of removing only the target organism. Pest control materials are selected and applied in a manner that minimizes risks to human health, beneficial and nontarget organisms, and the environment.

Source: University of California Statewide Integrated Pest Management Project

A checklist for storing household chemicals

Household chemicals such as pesticides and fertilizers become wastes if they're not stored carefully. Follow these easy tips to keep products usable for future projects.

- Always store chemicals out of reach of children and pets.
- Never store chemicals near sources of heat, sparks, or flames.
- Store chemicals in a dry place.
- Keep chemicals from freezing. However, DO NOT store gasoline or other fuels in your house — they're a fire hazard.
- Store chemicals in their original containers with labels intact.
- When a container is leaking, place the whole container into a larger one and call your county for disposal advice.

When pesticides and fertilizers are no longer needed, they should be disposed of properly. Call your county solid waste office for information on where you can bring them.

To learn more about what you can do:

www.reduce.org

* Your county solid waste office is a great resource for waste reduction materials, including local waste and environmental information, education resources, and speakers.

Minnesota Pollution Control Agency

Reduce Waste—If not you, who? was a project of the Minnesota Office of Environmental Assistance • 800-877-6300
March 2009

BECOMING LESS CHEMICALLY DEPENDENT

Reduce the need for pesticides and herbicides

Pesticides (which includes insecticides, herbicides, and fungicides) are designed to kill weeds, insects, rodents, and mold. These chemicals can be poisonous and can pose a danger to animals and people, especially children. Keeping pests out of your home and yard in the first place eliminates the need for pesticides—and toxic chemicals.

[*] *In order to survive, pests (both the animal and plant varieties) need food, water, and a place to live.*

In your yard

Keeping your lawn strong and healthy is the best way to care for your lawn without using a lot of pesticides. A strong and healthy lawn will minimize weeds from taking root or insects from causing serious, permanent injury to the lawn. There are several easy steps you can take to maintain a healthy lawn and reduce the need for herbicides.

- **Leave your grass clippings on the lawn.** Grass clippings can provide the equivalent of about one application of fertilizer per year.
- **Use a sharp mower blade** when cutting your lawn to make it less susceptible to disease.
- **Water infrequently, but thoroughly during dry periods** of more than a week or two. Water only about once a week and thoroughly (about 1 inch of water). Avoid watering during strong sun and heat to minimize losses to evaporation. The best time to water is early in the day, before 10 a.m.

- **Test your soil.** Find out what kind of fertilizer, if any, your soil needs. Obtaining a reliable soil test every few years can help you monitor the nutrient needs of your lawn. The University of Minnesota Soil Testing Lab (612-625-3101) charges $15. Some garden centers also offer testing.

Mow your grass to a height of 2 1/2 to 3 inches.

This is the single most important thing you can do to improve the health of your lawn. By keeping your grass a little longer, the roots grow deeper and can reach more water during dry periods. Longer grass also helps shade the soil surface, making it harder for weeds to get established.

In your home

If you're looking for a way to decrease your use of toxic chemicals in your home, take a look at how you handle unwanted pests. The best method to control pests, such as bugs and rodents, inside your home is to keep them out by cleaning up crumbs and spills quickly. Instead of reaching for a can of toxic spray, grab a broom!

Clean up food spills completely.

Store food in tightly sealed containers.

Caulk cracks and weatherstrip windows and doors to eliminate easy paths of entry. Check your foundation for cracks or spaces.

Plumbing leaks and damp basements can be an essential source of water for insects. Get rid of the moisture, and you could solve your bug problem.

Printed on paper manufactured without the use of chlorine compounds.

In your yard (continued)

- **Use fertilizers with zero phosphorus** unless a specific need is determined by a soil test. Phosphorus (the middle number on a fertilizer bag) should be zero. Careless use of phosphorus fertilizers creates runoff which can pollute nearby lakes, streams, and rivers. Phosphorus causes unhealthy levels of weed and algae growth.

- **Control weeds.** September is the best time of year to treat dandelions, plantain, creeping Charlie, and other perennial broadleaf weeds. Remember the best weed control is a healthy, dense lawn. If the weed invasion seems to be getting worse, find out why the grass is not competitive enough to crowd weeds out. Controlling weeds may be as simple as adjusting your other lawn care practices. Where there are only a limited number of weeds present, consider removing them by hand rather than using an herbicide.

- **Seed.** The best time to reseed bare spots is either early spring or around the middle of August. If deicing salt from sidewalks or roads has caused dead areas, consider reseeding with a more salt-tolerant variety. Always plant grass varieties that are adapted to our area and are appropriate for the way you use your lawn.

- **Aerate your lawn** if soil is compacted or there is significant thatch build-up. You can do this by using a lawn aerator available from most rental stores. Use the type that removes small cores of soil from the ground and places them on the lawn surface. Leave the cores to decompose naturally, contributing to a decrease in thatch, while the holes poked into the ground help improve soil aeration for healthier root systems.

These lawn care tips will help you keep your lawn healthy and less susceptible to disease and weed invasion, meaning you will have less need for herbicides and maybe even less fertilizer.

Fertilize in the fall. Mid- to late-October is a very good time to fertilize your lawn. At this time of year, fertilizer nutrients, including nitrogen, are taken up and stored in the plant where they help provide for healthy spring growth. Most fertilizers require water after application; follow the instructions on the label to ensure best results.

Muscle-powered weed killers

If you have a smaller lawn, weeds can often be managed with mechanical tools. Weeds such as dandelions can be removed easily by digging them up with a fishtail weeder (right) when the soil is damp. For those who would rather stay off their knees, there are upright pullers such as the Weed Hound™ (left).

For more information about pest and weed control

The **Northwest Coalition for Alternatives to Pesticides** has many free resources on non-toxic pest management, including fact sheets on specific chemicals and alternatives for many kinds of pests at www.pesticide.org/factsheets.html.

The Gardener's Guide to Common Sense Pest Control, by William Olkowski, Taunton Press, 1996.

U.S. Environmental Protection Agency **Pesticide Environmental Stewardship Program** for reduction of pesticide use is found at www.epa.gov/pesticides/.

The **Washington Toxics Coalition** has alternative pest control fact sheets on its web site at www.watoxics.org.

Recent studies on the human health and environmental effects of pesticides

The **Center for Disease Control's** report provides an ongoing assessment of the exposure of the U.S. population to chemicals (including pesticides): www.cdc.gov/exposurereport/.

Pesticide Action Network North America (PANNA) resource page contains reports, studies (use search words "scientific studies"), and a pesticide database at www.panna.org/resources/resources.html.

The Environmental Protection Agency's **Office of Children's Health Protection** has information about environmental health threats to children at http://yosemite.epa.gov/ochp/ochpweb.nsf/homepage.

Visit **www.reduce.org** for lots of ideas about reducing waste and toxic chemicals in your day-to-day life.

reduce.org

Minnesota Pollution Control Agency

Minnesota Pollution Control Agency helps Minnesotans make informed decisions and take actions that conserve resources and prevent pollution and waste to benefit the environment, economy and society. Visit our web site: www.pca.state.mn.us.

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