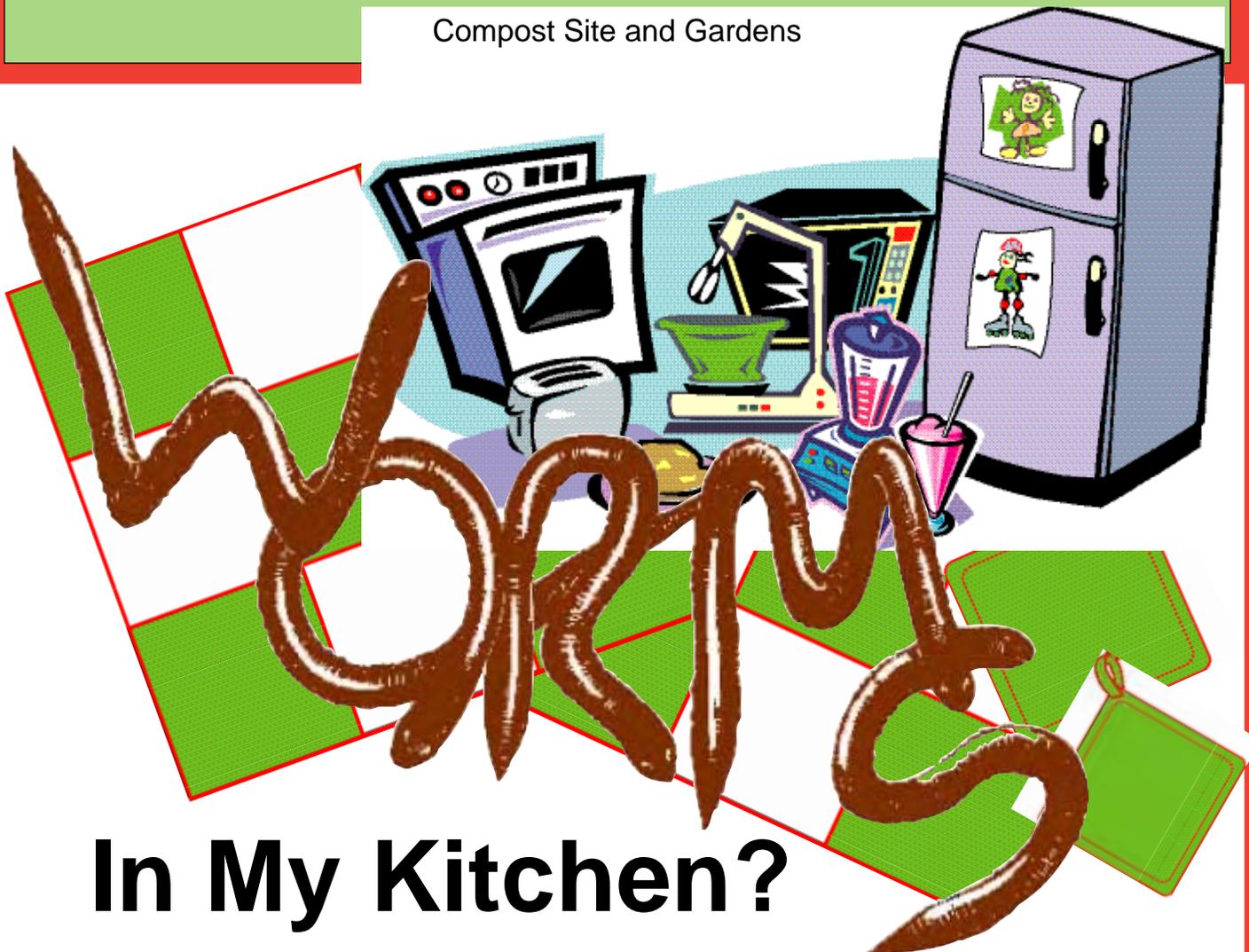


KITCHEN Composting

Fernbank Science Center ■ DeKalb County Schools

Compost Site and Gardens



In My Kitchen?

Composting is quite popular these days, for a very good reason. Yard and food waste can occupy up to 30% of our landfills, and with state laws mandating a reduction in landfilled wastes, people are turning to composting as an easy and extremely beneficial method of waste management.

Composting can turn yard clippings, tree and shrub clippings, and dead leaves into a rich source of fertilizer for your household plants, garden and yard. People who compost, however, are discouraged from incorporating food waste into their compost bins for various reasons. The introduction of food waste into a compost pile can invite unwanted guests, i.e., rodents, raccoons, and opossums, and contribute to a disagreeable odor if the pile is not managed properly. Yet food waste (9% of



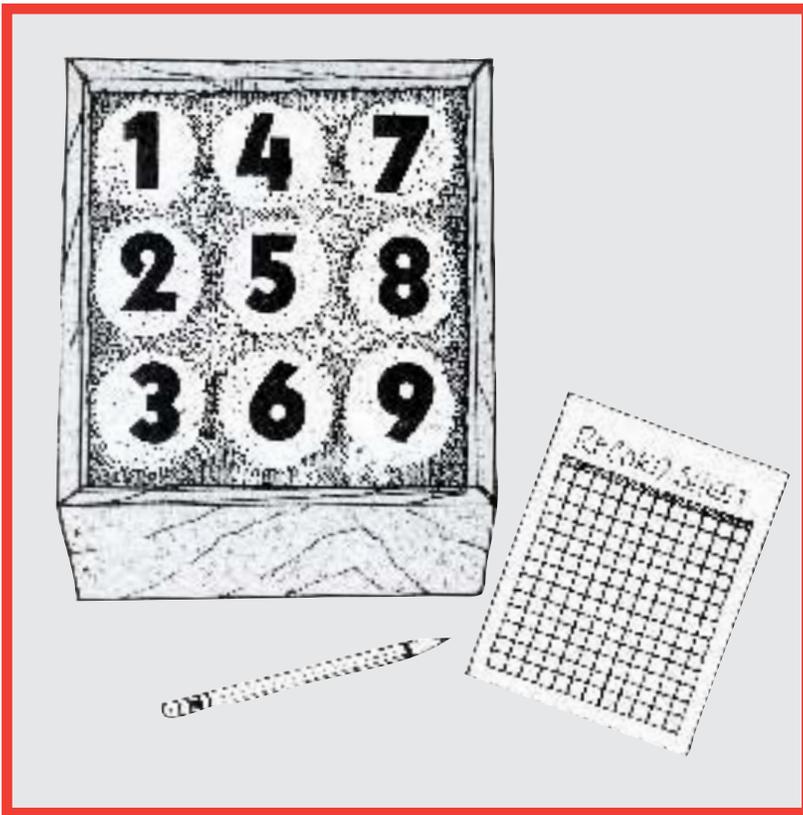


Figure 1.

household waste) is a rich source of organic matter. Castings can be used with potting soil or as excellent mulch for houseplants. This allows us to return badly needed organic matter to the soil.

Worm composting is a wonderful method for recycling food waste. The advantages to worm composting are that it can be done indoors and out; it provides apartment dwellers with an easy means of composting; and it can be done year round. But you're not ready to have worms as houseguests, you say? Worm composting is a very easy, odorless, escape proof method of recycling food waste. Some people keep their worm bins right on their kitchen counter, ready to scoop food waste into, while other less fervent composters (less progressive, shall we say?) will conceal their bins under their sinks or in closets, basements or back yards.

Steps to Successful Kitchen Composting

1 CONTAINER – A container of wood or plastic can be used. You can either buy a container or build one, or use your imagination and recycle something you already have at home. Wood is preferred because it is more absorbent and has better insulating properties than plastic. If using plastic, just be sure to check the moisture content of your bin — the bedding tends to become quite wet. In the wonderful book called Worms Eat My Garbage, Mary Appelhof suggests that you weigh your household food waste for one week, then provide one square foot of surface area per pound of garbage. Container depth should be between 8 - 12 inches. Depending on the size of your container, you need to drill holes ($\frac{1}{4}$ – $\frac{1}{2}$ inches) in the sides and bottom for aeration and drainage. If you plan on keeping your bin indoors, you might not want to drill holes in the bottom. If you do drill holes, raise the bin on some type of legs and place a tray beneath it to catch any extra liquid that can then be used as a wonderful plant fertilizer. The bin also needs some type of lid to contain moisture and provide darkness for the worms.

2 BEDDING – Bedding must be provided for the worms to live in and for food waste burial. You probably already have most bedding materials on hand. Shredded newspaper and cardboard, shredded fall leaves, chopped up straw and other dead plants, sawdust, and dried grass clippings are all good choices. Peat moss, compost, and aged manure will also work. It is a good idea to vary the bedding as much as possible to provide more nutrients for the worms and to create richer compost. Several cups of sand or soil will provide grit for the worm's digestion process. It is necessary to moisten the bedding before putting it in the bin. The moisture level should be like a wrung-out sponge. The bin should be about three-quarters full of moistened bedding. Toss the bedding (gently) to create air spaces.

3. WORMS – There are two types of earthworms used for worm composting. The most common is *Eisenia fetida* (red wiggler, brandling or manure worm) or *Lumbricus rubellus*. If you are brave enough to procure your own worms, you might find a horse stable or farmer with a manure pile and collect a bagful (preferably a very strong bag) of manure with worms. You can also check your own or your neighbors' compost pile for worms. There are many places to purchase worms, from your local bait store to the Internet. Mary Appelhof suggests that the correct ratio of worms to food waste should be two pounds of worms for one pound per day of food waste.



Red Wigglers, *Eisenia fetida*

4. FEEDING YOUR WORMS – Food scraps such as fruit and vegetable peelings, eggshells, tea bags, and coffee grounds with filter, are good for starters. Meats and dairy products may be included but should be in small amounts to avoid odors. Some people collect food waste during the day in a bowl (with lid) on the counter and when it is full, add it to the worm bin. Others will freeze their food waste in a large baggie, and defrost it in the microwave before feeding it to their worms. As a real gourmet treat for worms, you can blend your food waste into slurry before feeding. This allows the worms to process the food waste very quickly. When adding the food to the bin, you should bury the waste by pulling aside some of the bedding, dumping the waste, and then covering it up with the bedding again. It is best to bury the waste in different locations every time. (See Fig. 1)



5. LOCATING AND MAINTAINING YOUR BIN – Worm bins may be located indoors all year or outdoors in the milder months. Temperatures should be between 40-80 degrees F. Bins should be kept out of direct sunlight and heavy rain.

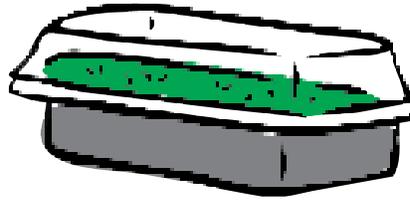
There is little work to maintaining a bin other than adding food until about 2-3 months have passed. At that time, there should be little to no original bedding visible in the bin, and the contents should look very brown and earthy in appearance. This earthy product is called worm castings. Before using the castings, it is important to separate the worms from the finished compost. There are several methods. The easiest way is to move the finished compost over to one side of the bin and add new bedding, moisture and food waste in the new space. Over time (several weeks) the worms will gradually move over to the new bedding and the finished compost can be skimmed off of the top as needed. If you have time and do not mind getting your hands dirty (this is a great project for kids), gently dump the entire contents of the bin onto a large piece of plastic and separate the worms manually by building little mountains of castings. The light will force the worms to the bottom of each pile and you can scoop the castings off of the top. Be sure to watch for the tiny, lemon-shaped worm cocoons that contain baby worms. Mix some of your finished castings in your new bedding and store the rest for later use.

6. HOW DO I USE MY CASTINGS? – Plants grown in castings have been shown to grow at a better rate than plants grown in commercial potting soil. It is also believed that castings have a higher level of available nutrition than commercial plant media have and therefore promote plant growth. Castings can be used with potting soil or as excellent mulch for houseplants. They can be sprinkled on the lawn, spread around the drip line of trees or used directly in the garden – either dug into the soil or used as a mulch.

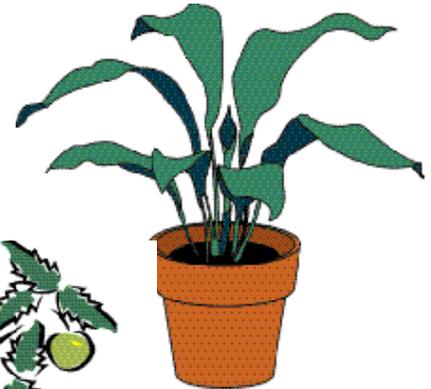
Uses of Castings



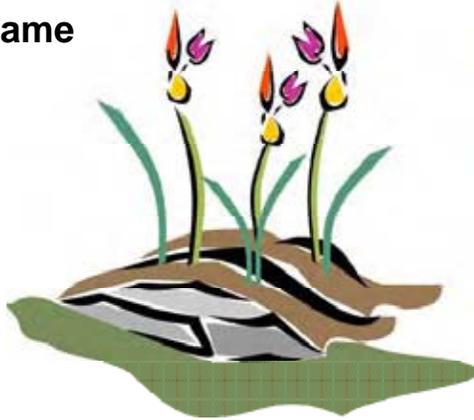
Cold Frame



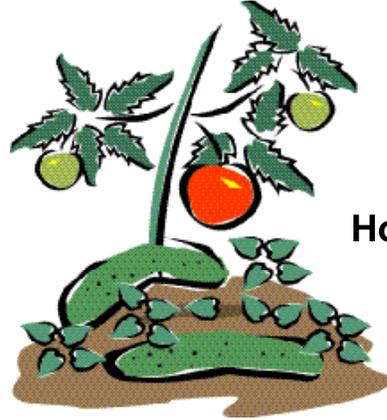
Seed Trays



Mulch
House Plants



Flower Gardens



Vegetable Gardens

7 COMMON PROBLEMS – Vermicomposting is so easy that there are very few problems. One problem that can occasionally occur is an unpleasant odor. This odor may be present when the bin is overloaded with food waste and the food sits too long before the worms can process it. The solution is to stop adding food waste until the worms and microorganisms have had a chance to break down what is already there. You may also gently stir up the entire contents to allow more oxygen into the mixture. Check your drainage holes to make sure that they are not blocked. You might need to drill more holes if your compost is too wet. If your worms begin crawling out of the bedding and onto the sides of your bin, conditions are either too wet or too acidic for them. Add a little fresh bedding for the moisture problem and some garden lime to adjust for the acidity.

Worm bins can be a very rewarding experience for the entire family. Not only can you learn a little science and keep food waste out of the landfill, but you will also have a very healthy yard and houseplants as a bonus.

**For additional information,
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