## Q & A: Composting & Vermicomposting

Q: Why should we compost?
A: To reduce needless contributions to the waste stream, which turn into potent greenhouse gases like methane and carbon dioxide. Instead, create a product which improves soil quality and promotes healthy plants. Learn more about Backyard Composting from the Cornell Waste Management Institute website http://cwmi.css.cornell.edu/smallscale.htm

Q: Who can compost?
A: There are approaches and systems available for homeowners, apartment dwellers and communities, large, small and in between. Anyone, anywhere can compost.

Q: What can I put in my home compost pile? Will it smell?
A: Use plant wastes such as leaves, grass clippings and spent plants, non-protein food scraps, as well as paper, cardboard and wood chips. Layer 1-part Greens with 3-parts Browns. No meat, no dairy, no diseased or seedy plant material, and be careful with manures. Your compost bin will not smell if you add enough Browns. Learn more about balancing Greens and Browns from Composting at Home: The Green and Brown Alternative found at https://ecommons.cornell.edu/handle/1813/29111

Q: Will it attract pests?
A: Not unless you add pest-attracting food. Lions and tigers and bears (oh my!) will not eat your compost if done correctly. Learn more about Preventing Animal Nuisances in Small Scale Composting from the Cornell Waste Management Institute website https://ecommons.cornell.edu/handle/1813/2177

Q: Is it expensive and does it take up a lot of room?
A: No, simple systems can be built inexpensively. Learn more about Choosing a Compost System from the CCE Suffolk Diagnostic lab at https://s3.amazonaws.com/assets.cce.cornell.edu/attachments/5282/Choosing_a_Compost_System.pdf?1418849831

Q: What do I do with the finished product?
A: Compost is a valuable soil amendment and may also be used as mulch. Compost contains plant nutrients and improves both soil aeration and water-holding capacity.

Q: What happens if I don't turn the pile?
A: Compost happens, but at a slower rate. The more you turn the pile, the quicker you will produce compost.

Q: When is compost finished and ready to be used?
A: It is dark, crumbly, earthy smelling (not smelling like ammonia or rotten eggs), the original materials are not recognizable, and it will no longer heat up even after mixing.

Q: If I were to remember just the basics of home composting, what would it be?
A: That to compost effectively, you need the right combination of materials, space, air and water. For more information on Home Composting visit the Cornell Waste Management Institute website at http://cwmi.css.cornell.edu/composting.htm and read the brochure "Home Composting" found at https://ecommons.cornell.edu/bitstream/handle/1813/44638/compostbrochure.pdf?sequence=2&isAllowed=y

Q: What is vermicomposting?
A: Vermicomposting is composting with worms. It is typically done indoors in a closed bin populated with red wiggler worms that eat organic waste and expel it as worm castings or droppings. For more information on vermicomposting, visit the resources at the Cornell Waste Management Institute website at http://cwmi.css.cornell.edu/vermicompost.htm

Q: What equipment do I need to vermicompost?
A: Most people who keep a "worm bin" use a box or container (a plastic storage container works well) which has been perforated with air holes around the sides and top. Bedding for the worms can be made from moist, shredded newspaper (no glossy pages, please), computer paper, or coir. Add worms and food scraps and you are set.

Q: Can I use the worms I find in my garden?
A: No. The types of worms you find in your backyard are great for your garden and your backyard compost bin, but they're not suited for vermicomposting. Earthworms are known for burrowing and transporting organic material deep into the soil, as opposed to decomposing surface waste. In addition, earthworms will try to leave your bin if they are disturbed. Red wiggler worms are surface dwellers that are specially adapted to the environment of decomposing organic waste and don't mind being disturbed or kept in captivity.

Q: If I can't use my garden worms, what worms do I use?
A: The best worms for composting are "red wigglers" -*Eisenia fetida* and *Eisenia andrei*.

Q: Where do I get the worms?
A: Find a local supplier, but if that is not possible, order from a reputable supplier.

Q: Are there any concerns importing worms from out of state?
A: While there are species of invasive earthworms that are of concern to ecologists, the worms used to vermicompost are not earthworms. In fact, the "Red Wigglers used in

vermicomposting are not found in the wild and are unable to survive the cold of northeast winters. Purchasing worms from reputable, recommended sources is advised".
http://www.srs.fs.usda.gov/compass/2012/12/18/invasive- earthworms-no-joke/
http://www.vtinvasives.org/other-invasives/earthworms

Q: Where should I put my worm bin?
A: Red wigglers feed most efficiently at temperatures between 59° - 77°F (15 - 25°C). While they tolerate a wide range of temperatures, those above 85° or below freezing may kill them. There are lots of good places for your worm bin inside of your house or apartment. They can be in basements, laundry rooms, under stairs, or under your kitchen sink. Basically, they need to be out of severe temperatures and somewhere where you won't forget about them!

Q: How many worms will I need?
A: Worms are sold by weight rather than number. Worm growers estimate there are about 1,000 worms per pound. A 2:1 ratio is recommended, worms to food scraps; meaning, for every pound of worms, you will need ½ pound of food scrap per day on average. Weigh your food scraps daily for at least a week to estimate how many worms you might need.

Q: Once I have my bin, what do I do?
A: Set up your bin a few days in advance of receiving your worms. While this isn't essential, it allows time for microbes to grow (which are what the worms are actually eating, not the food itself) on your two worm bin ingredients: bedding and food scraps. It's a friendlier environment for the hungry worms and makes for an easier transition. Also, throwing a handful or two of soil into the bin will help get the microbial action started. When you add food scraps to your bin, bury it under the bedding. Add new food scraps in different places around the bin.

Q: What do I feed my worms?
A: Red wigglers don't actually eat your food; they eat the microorganisms that eat decomposing organic matter. You can feed them the majority of your kitchen food scraps. Non-citrus fruits, vegetables, tea bags, coffee grounds and filters and crushed eggshells are great. The smaller you cut up the food scraps, the faster the microorganisms will break them down. There are some DO NOTs:

- No citrus. Citrus peels contain limonene, which is toxic.
- No meat or dairy. Just as in other home compost systems it attracts rodents and won't decompose at the same rate as the vegetables so may start to smell.
- No oil.
- No pet or human feces.
- No woody plant material or pits. They won't break down quickly enough.
- No non-organic matter. Plastic, metal, soap or other non-food items.

Q: Can I over-feed my worms?
A: Yes. If you overload the bin with food scraps, you may notice an odor of rotting food. This is due to the anaerobic conditions. Aerating the bin by turning the compost, adding fresh bedding and/or removing the undecomposed food should help return the worms to a healthier state.

Q: What are common problems with worm bins?
A: There are several common problems to watch for, but the solutions are usually a quick fix.

- Too much moisture – add dry bedding.
- Bedding too dry – spritz with water.
- The bin is smelly – check for overfeeding – remove excess food.
- Infestation - usually fruit flies - freeze scraps for 24 hours before you add them to the bin.
- My worms are gone! – look for centipedes in and around your bin – they are voracious carnivores. Cover air holes with a fine mesh screen to prevent entry.

Q: What are the other organisms in my bin?
A: Once your composting worm bin has been going for a while, you may notice other creatures like white worms, springtails, and millipedes living in your bin. This is normal. These creatures will not hurt your worms. In fact, they help the composting process. The only bugs that may be present that pose a threat to worms are centipedes.

Q: How do I harvest my compost?
A: After you get a good amount of castings you will want to remove them to use in your garden or houseplants without losing your worms. The goal is to keep the worms in the bin so they can keep doing what they do best. Find the areas that you fed longest ago and are the most broken down and remove them, placing them on a tarp or other surface in a pyramid small heap in the sun. Worms don't like light, so will dive below the surface to escape the sunlight. Wait 5 minutes and remove the top layer of castings. Continue this process until all your worms are together at the bottom of your pile. Return your worms to your bin.

Q: How often should I harvest?
A: Generally, it takes three to six months to harvest finished compost.

Q: What do I do with the compost?
A: Worm castings are a nutrient rich additive to soil. Use vermicompost when getting ready to plant new seeds or starts. Work a layer one to two inches deep in beds; in pots use a ratio of one part vermicompost to two parts soil. Top dress every two to four weeks for continued soil health. Vermicompost can also be used to make a compost tea for foliar feeding.

Q: How do I make compost tea?
A: Compost tea is a liquid fertilizer made from compost. Worm compost tea can be sprayed on plants for foliar feeding or used on the soil as another form of soil nutrition.
Here is an easy compost tea recipe from Cornell Waste Management Institute: Add 1-2" of compost to a water can or rain barrel. Allow mixture to "steep" for a day, mixing occasionally. Water plants with tea as you normally would. The resulting "tea" helps make nutrients already in the soil available to plants.

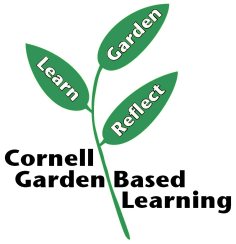
Q: Why should I compost with worms? Why would I want to?
A: Vermicomposting is an important part of long-term sustainability in your home and garden. The process reduces the amount of food waste being sent to landfills, and the fossil fuel being used to transport and process waste. Worm compost also conserves the resources needed to produce and import soil amendments into your garden. By putting food scraps into

a worm bin, you are using every part of the food you paid for. Worm composting is a fun and easy way to reduce your carbon footprint, and an excellent teaching tool for children.

References:

Except where cited, answers adapted from information in Appelhof, Mary. Worms Eat My Garbage. Flowerfield Enterprises, LLC, Kalamazoo, MI. 1997
http://www.urbanwormcomposting.org/faq-2/#8

http://www.sustainabletable.org/114/vermicomposting-101
http://compost.css.cornell.edu/worms/basics.html

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