



## Composting With Worms



### Why compost with worms?

Worm composting is a decomposing method for recycling organic food waste with red worms. The advantage of worm composting is that it can be done indoors and outdoors for year round composting. It is a very convenient way of composting for apartment dwellers, school staff and students, persons with disabilities, office workers, elderly persons and anyone else who would have difficulty maintaining an outdoor compost pile.



Worm compost is made in a container filled with moisten bedding and red worms. You add your food waste for a period of time and the worms will eventually convert the entire contents into fine, rich, dark granular compost called



"castings". Worm castings are an excellent source of slow-release soil nutrients for your plants or lawn.

## Creating a Home for Your Worms

To create a home for your worms, you'll need the following:

1. *Container* - You can purchase a commercial worm bin, reuse a container, or make your own from a plastic storage crate, blue box, or wooden crate. Worms are light sensitive, so provide a lid if possible. The bin **MUST** have some form of ventilation. The most effective way to do this is to drill holes in the lid. If moisture is collecting under the lid or on the bottom of the bin, just drill more holes in the lid or add more bedding.

2. *Bedding* - Red worms can live in bins made from plastic or wood. These containers are partially filled with bedding material, most commonly peat moss, shredded newspaper, shredded cardboard, straw or a combination of these materials.

3. *Moisture* - The worm bedding should be kept as moist as a well-wrung sponge. Occasionally, the bedding can become too wet and needs to be gently loosened with a hand cultivator or small garden fork.



4. *Acidity* - Red worms prefer bedding that is slightly acidic. However, if the bedding is all peat moss, or the materials added are very acidic, add crushed and dried eggshells to reduce the acidity.

5. *Light* - Red worms are very sensitive to light and need an opaque bin that has a lid or a dark plastic bag placed over the bedding to keep out the light.

6. *Ventilation* - Most bins also have some means of ventilation through holes drilled in the bin itself. Additional dry bedding material can also be added to help keep air in the bedding.

## Finding Your Worms

Red worms make the best composters. They eat their own weight in organics daily. You can buy them from worm breeders or from certain environmental stores. Call 416-392-9804 for a list of worm dealers or for information on how you can catch your own red wigglers. We recommend approximately 0.4 kg (1 lb) of worms for every two people.



Red worms are available for purchase from commercial growers, but can also be found for free in your own backyard! Red worms live in organic matter that is in contact with the ground. You will find them under decomposing leaves and decaying plant waste, manure, and the cooler decomposed parts of a compost pile.

Note: Red worms are not the worms that appear on roads and sidewalks after a rainfall.

## Feeding Your Worms

Red worms eat almost everything that humans eat. Worms should be fed at least every few days. Simply bury the food scraps a minimum of one inch below the surface of the bedding and leave for the worms to eat. Fresh food waste decomposes in about a week or two.

## Putting Your Worms to Bed

Fill your bin 2/3 full of bedding and slowly mix in water until the bedding is as moist as a well-wrung sponge. Add 0.4-0.9 kg (1-2 lbs) of soil for grit. Newspapers torn into 2.5 cm (1") strips, cardboard (soaked in water overnight), straw or dry leaves make excellent bedding. Keep the mixture light and fluffy.



Bedding plays an important role in the worm composting process. It is the environment in which your worms live and eat. The five essential reasons for preparing a worm bedding are: to hold moisture in the bin, to allow for air circulation, to give the worms a moist place to live and work, to permit air exchange through the bedding, and to control odours.

## Preparing the Bedding

Mix one-half of the bedding with about one-half of the required amount of water in a large mixing container. Add one or two handfuls of soil, crushed eggshells or powdered limestone, then add some more water. Mix until the water is well distributed throughout the container. Add entire contents to worm bin and distribute evenly.



## Different Types of Bedding Materials



1. *Shredded Newspaper* - Tear into 1" to 2" strips. Soak overnight in water. Arrange paper in bin. Fluff up any compacted strips.

2. *Peat Moss* - Soak overnight in water to reduce the amount of acidity. (To reduce acidity, add six to 12 crushed eggshells). Squeeze out water before using. Mixing one-third to one-half peat moss with another material (newspaper, cardboard or leaves) will create a good bedding and will be cheaper than using only peat moss.

3. *Shredded Corrugated Cardboard* - Tear into shreds and soak in water before using. Mixing with another material will prevent compaction. Do not use waxed, bleached, coloured or white cardboard.



4. *Leaves* - Check leaves for insects that you do not want indoors. Do not use leaves that may have been sprayed or contaminated with toxins. Shred leaves then mix with another material. Layer mixture in bin.

## How much water is required?

A worm's body is approximately 75 per cent to 90 per cent water. The bedding should have the same moisture content to allow the worm to breathe easily through its skin.



## What to Feed Your Worms

You can compost food scraps such as fruit and vegetable peels, crushed egg shells, tea bags, beans, breads, grains, pasta, coffee grounds and filter, crushed egg shells, fruits, peanut shells, plain grains and vegetables. Make sure that the food materials are not mixed with anything unacceptable (ie. bread with butter).



Do NOT compost meat scraps, dairy products, oils, butter or margarine, fish, poultry or peanut butter because of problems with smells, flies and rodents. Note: The smaller the pieces of food, the faster the worms will eat it!



## Keeping the worms happy!

1. Never let the bedding dry out, or become too wet. Keep a supply of dry bedding handy to add each time you add food scraps, or if the bin seems overly wet (prevents moisture build-up). This will keep your bin trouble-free and your worms happy.



2. Avoid extreme temperatures. Don't let the temperature in the bin drop below 27°C or rise above 40°C.

3. When adding food to your bin, always bury it under 7-10 cm (3-6") of bedding. Imagine the bin is separated into six

sections and bury food starting with section one, then two, three and so on. When you get to the last section, return to the first and start again.

## Special Additives

Add a handful of soil or a tablespoon or two of crushed, dried eggshells or powdered limestone (calcium carbonate) at the initial stage of bedding preparation. This gritty material will help the worms to break down food particles in their gizzards. There are additional benefits. For instance, the crushed eggshells and powdered limestone will add calcium to the bedding, and prevent the material in the bin from becoming too acidic.



## Compost is ready!

Your worms are finished composting when both bedding and food scraps are turned into "castings" (usually happens every 3-6 months). Castings are tiny dark brown droppings with a sweet, rich, earthy smell. Remove this finished compost as soon as possible - worms can't survive in their own castings.



Here are three ways to harvest your bin:



bedding.

2. Under direct light, dump the contents of your bin in and return worms to fresh bedding.



3. Remove 1/2 to 2/3 of the finished compost (worms too) and add them to your garden. Add fresh, dry bedding to the bin. Remember: Do not overfeed your worms because they need about three weeks to repopulate.

## Serving Up Finished Compost

Once the compost is ready, you can then:

- Add compost directly to your garden or mix some with potting soil.
- Give castings and extra worms to a friend. They can start their own composting bin with your transplanted worms.

- Sprinkle castings on the soil around houseplants.

## Common Problems and Solutions

The following are common problems and solutions you might have while composting:

1. *Worms are trying to escape.* Too wet - add more bedding for ventilation. Too dry - Moisten bedding until damp. Bedding is used up - Harvest your bin and add fresh bedding.

2. *Bin smells rotten.* Not enough air - Leave lid off or drill more ventilation holes. Too much food - Do not feed worms for 1 to 2 weeks.

3. *Fruit Flies.* Exposed food - Bury food under 7 to 15 cm of bedding. Too wet - Add more bedding for ventilation. Too acidic - Add 1 tbsp. of crushed eggshells.

