

# OWNER'S MANUAL





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# The Basics of Vermicomposting

## What Is Vermicomposting?

Vermicomposting is the consumption and decomposition of organic waste by an ecosystem of earthworms and microbes, creating a potent natural fertilizer called worm castings. This process is normally odorless and reduces the volume of organic waste to a fraction of its original volume.

Microbes begin the decomposition of the organic waste and both the microbes and waste are consumed by earthworms. The consumed microbes interact with the flora already present in the worm's gut, creating excretions with high levels of microbial activity which adds

life back into your soils and potting media.

Vermicomposting not only produces an incredible fertilizer, but it diverts our heaviest household waste (food waste) from our waste stream where it would otherwise rot and emit harmful methane gas in our landfills.

## How Does It Work in the Urban Worm Bag?

In nature, composting worms only live in the top 6-12 inches of loosely-packed soil, leaf litter, manure and other organic matter. It is no different in the Urban Worm Bag!

As organic waste and bedding are added into the Urban Worm Bag, the worms will move into the new, upper layers of the waste, leaving their castings behind in the lower layers.

By allowing you to harvest from the bottom, the Urban Worm Bag takes advantage of the upward migration of the worms, meaning your harvests should normally contain little to no worms.



## Where to Assemble and Use the Urban Worm Bag

The Urban Worm Bag can be installed and used in a variety of places within your home, garage, office, or classroom. Basements or below-grade dwellings are perfect for the Urban Worm Bag, due to the constant temperature and humidity.

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The minimum requirements of any location are that it is flat, level, and protected from direct exposure to sunlight, rainfall, or extreme temperatures. This is why we recommend, whenever possible, to use the Urban Worm Bag indoors in a climate-controlled setting for best results.



Once you have begun filling your Urban Worm Bag, it should be moved carefully by 2 adults as dragging it across the floor will place stress upon the connectors.

### LEVEL THE PLAYING FIELD

INSTALL THE URBAN WORM BAG ON A FLAT, LEVEL SURFACE



## Preparing Your Urban Worm Bag for Success

New worm bins need a little attention before they become hospitable environments for worms, and the Urban Worm Bag is no different. Use the following guidelines to prepare the Urban Worm Bag to receive worms!

### Prepare Bedding

Adding appropriate bedding is an important part of starting and operating your Urban Worm Bag. Whereas organic food waste is high in nitrogen and will decompose quickly, bedding is high in carbon and will decompose more slowly, allowing the contents in your worm bin to decompose at a





moderate rate to prevent rotting and anaerobic conditions. Coco coir, peat moss, aged horse manure mixed with shredded paper or cardboard are excellent choices for bedding.

You should fill your Urban Worm Bag to roughly 1/5th of its volume with bedding and add bedding periodically as you add food waste.

**Tip:** *You can never have too much bedding. Adequate bedding reduces the likelihood of leachate, fruit flies, foul odors, and most other problems you could encounter in your worm bin.*

For best results, consider adding a few handfuls of dirt, crushed organic waste or existing vermicompost to diversify your bedding and help grow the microbe population.

## Our Recommendation for Bedding: Coco Coir

We recommend 2 650g bricks of Urban Worm, Coco Coir, which provides excellent



porosity and texture. Pour slightly less than one gallon of water into the bag the coco coir is packaged in, breaking it up by hand until it has absorbed the water.

## Adding The Bedding

Ensure that your bottom drawstring is cinched or tied shut and that the drawstring is outside of the Urban Worm Bag, not inside of it.

**Note:** *There will be a small hole in the bottom of the interior fabric enclosure, even when the drawstring is fully closed.*

Leave the bottom cover of the Urban Worm Bag detached now. Place a container or tray under the Urban Worm Bag in order to catch any bedding or excess moisture that may fall through the small hole in the bottom of the fabric enclosure.



will allow microbes to begin to grow before the worms arrive. It also allows the conditions in the Bag to stabilize and give you time to fix any temperature or moisture issues before you add the worms.

But if waiting 48 hours is not possible, adding the worms earlier should be OK.

## Adding The Worms

Now it is time to add worms to the Urban Worm Bag!

### How many worms?

We recommend that you begin with between 1 to 2 lbs of composting worms. The worms will multiply quickly and the population will eventually grow to the capacity that your conditions allow. At maximum capacity in optimal conditions, your Urban Worm Bag may hold up to 6

lbs of composting worms or more! But composting worms can be expensive and it is probably safer to start with just 1-2 lbs of worms at first.



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Consider adding a layer of paper to block the exit of any initial bedding.

Add the bedding to the bottom of your Urban Worm Bag. Once the bedding material or excess moisture stops leaking, you may attach the bottom. Close the top zipper and wait for 48 hours before adding the worms, if possible. This



## What Kind of Worms?

The most appropriate species of worms are Red Wigglers (*eisenia fetida*) or the European nightcrawler (*eisenia hortensis*). These worms are tolerant of the widest range of environmental conditions.

These species can be purchased through our suppliers at

[urbanwormcompany.com](http://urbanwormcompany.com).

## The First Few Days

Once the bedding is ready, add your composting earthworms. It is recommended that you also add all of the bedding that your worms were shipped in. Do not mix the earthworms with the bedding. They will move into the bedding on their own.

Then keep the top of the Urban Worm Bag completely closed.



At first, your worms may not be comfortable in their environment and may try to escape by crawling up the side of the Bag. If, after 24 hours, you notice a significant amount of the worms gathering on the sides of the Bag, it is recommended to unzip the top of the Bag and install a bright light directly over the open Bag. Light is repellent to earthworms and it

will force them to retreat into their bedding.

## Feeding Your Worms

While this instruction manual gives you helpful rules of thumb for operating your Urban Worm Bag, these rules should not be followed blindly. The Urban Worm Bag is not just a bin. It is a wonderful and complex ecosystem!

If you observe it, pay attention to how the worms are processing food, what they like and what they don't, you will be able to offer them the best conditions possible!

Read the following as a starting guideline for operating your Urban Worm Bag. But if your own eyes or nose tell you something is wrong, then please contact us at [support@urbanwormcompany.com](mailto:support@urbanwormcompany.com).

## What Worms Like and What They Don't

While nearly all organic waste can be vermicomposted given enough time and preparation, a home worm bin like the Urban Worm Bag should probably only be fed non-meat, non-dairy food waste.

Generally, it is a good idea to diversify the food waste you put into the Urban Worm Bag. A good balance will be a roughly 70/30 mix of bedding and foodwaste, by volume. 70% bedding or greater will help keep the food waste aerated and will help keep the pH neutral.

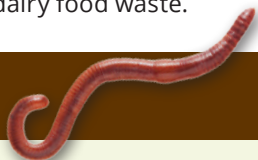
## How much food waste can your Urban Worm Bag process?

How much food waste your Urban Worm Bag can process depends on two main factors: maintaining optimal conditions and how many worms are in your worm bin.

Assuming optimal conditions your worms will consume roughly 25-33% of their own weight each day.

However, it is essential that you don't overfeed your worms. Food waste should be added in thin layers of no thicker than 1-2 in. Always observe how fast the worms are eating the waste and don't add any more if there is still a top fresh layer of uneaten food. This will prevent overheating in your bin.

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### Feed ✓

- Fruits and Vegetables
- Coffee Grounds, Tea Bags, and Tea Leaves
- Banana peel and other exotic fruits
- Pulp from a Juicer
- Ground Egg Shells

### Don't Feed ✗

- Meat or Dairy Products
- Citrus
- Fats or Oils
- Onions and Garlic
- Bread or Pasta
- Wood Ash
- Cat and Dog Feces

### Bedding

- Coco coir
- Aged Horse Manure
- Shredded Paper / Cardboard, toilet paper rolls, tissue
- Leaves and mature cured compost







In the beginning, add small amounts of food waste. If you started with 1/2 lb of worms, add no more than 1 lb of food waste and bedding every 3 days. If you started with 1 lb of worms, add no more than 2 lbs every 3 days. Check the bin periodically to estimate how quickly the worms are processing the

waste. If the worms are processing the waste quickly, you will notice a top layer with organic waste (1-1.5 in thick) where only a few worms are visible.

Directly below, another layer will form with a lot of worms and partly composted organic waste. In the top layer, the microbes start to colonize the waste and in the second layer, worms do the rest.

As your Urban Worm Bag matures and your worm population expands, you will find that you are able to add greater amounts of food more frequently.

## Tips and Tricks for Feeding Your Worms

Remember that worms do eat some amounts of the food waste directly, but what they consume the most are the microbes growing

on the decomposing food and bedding. Finely chopping your waste will increase the surface area of the food waste and allow greater decomposition, microbe colonization, and ultimately consumption by the worms. Be advised, however, that moisture releases more quickly from finely chopped food waste.

Regularly adding a layer of newspaper (1 sheet is enough) on the organic waste will retain some moisture and help the microbes to colonize faster and at the same time, it will reduce the likelihood of fruit flies. You could do this every



# Maintaining Optimal Conditions

A successful experience with the Urban Worm Bag isn't simply about feeding your worms organic waste. A worm bin should be dark, moist, pH neutral, and at room temperature if possible. While maintaining darkness is easy in the Urban Worm Bag, it is necessary to observe the 3 other critical conditions inside your worm bin: **temperature, moisture, and pH.**

## Temperature

The optimum temperature range for vermicomposting is between 70°-80°F. Temperatures beyond 95°F and below 39°F will harm or even kill the worms and slow or stop the vermicomposting process.

Temperatures outside of this range can be tolerated only for short periods of time.

If your bin is indoors, but your temperature is higher than desired, it is possible that you are feeding the Urban Worm Bag too much, resulting in thermal increases due to the hot composting of excess food waste. Remove the top layer of organic waste and add bedding.

## Moisture

Moisture should be maintained between 60-70%. This is best measured by simply feeling the contents of the Urban Worm Bag. Put a small amount of vermicompost in your hand. It should have the feel of a damp sponge.

When you squeeze the vermicompost firmly, you should be able to

squeeze out a single drop of water. Any more than this indicates excess moisture.

If it's too wet, add some dry bedding and stop feeding for a few days.

If it's too dry, use a spray bottle or spritzer as needed to maintain appropriate moisture levels. Do not pour water directly into the Urban Worm Bag. **Note:** *Be aware that the moisture will depend on the ambient humidity wherever it is you keep your bin.*

## pH

pH is a number representing acidity or basicity of a substance. Vermicomposting is a pH-neutral to slightly-acidic process and you should be maintaining a pH between 6 and 7.

Inexpensive pH meters are not reliable. But if you are adding

paper and cardboard to the organic waste, then pH should easily be maintained within this range.

Also, consider adding 3 tablespoons of lime or crushed eggshells each month.

## Harvesting Your Urban Worm Bag

After roughly 6 months \*and\* when your Bag is 3/4 full, your Urban Worm Bag will be ready to harvest!

To start, place a shallow container below the Bag. Release the buckle and Velcro, and gradually loosen the locking mechanism on the interior drawstring enclosure. This will allow worm castings to fall into a container below the bag.



**Note:** You may find that the castings will not fall freely from the bottom of the Bag. You may need to disturb the outside of the interior enclosure in order to loosen the castings enough to fall into the container.

Your harvested worm castings should contain no or very few worms. Stop harvesting when you reach a layer containing worms. Once your harvest is complete, cinch the drawstring lock to close the interior drawstring enclosure. If the harvested castings contain many worms, it indicates that the bottom has gotten too wet as the worms are attracted to moisture.



## Harvest Castings

Empty the contents of the harvest in the top of the Urban Worm Bag, close the interior fabric enclosure, and close the bottom zipper.

Wait for at least another month before harvesting again. If the harvested castings were wetter than desired, it may be a good idea to operate the Bag with the bottom detached, exposing the interior enclosure to better airflow. If you keep the bottom detached, it is recommended to leave a container to catch any leachate that may drain out of the bottom.

**Note:** *Leachate is not a desired by-product of the Urban Worm Bag and indicates overfeeding or overwatering.*

## Urban Worm Bag Timeline

A guideline of what you can expect during your first few months!

### Getting Started

Fill the Urban Worm Bag with an initial bedding layer, 10-12 in deep, mixed with a small amount of organic food waste in order to promote growth in your microbe population. Add your worms 48 hours later. After 3 days, begin adding thin layers of food waste every 3 days, observing how the worms are consuming food before feeding more. Consider keeping a layer of damp newspaper on the top of the waste and bedding.

### Month 2-4: Growing population of worms

The starting layer of bedding is mostly processed and you are able to feed your worms every 3 days or more as the worms process food waste more rapidly. You will start to observe cocoons, juvenile worms, and an overall growing worm population.

Under the top layer of food waste and bedding, you should see a layer of processed waste and an increasingly consistent texture the deeper you explore.



## Month 4-6: Reaching full capacity and first harvesting

Your worm population will approach its maximum density and process your layers of food waste at its maximum efficiency of roughly 2 lbs per day.

Your Bag will be very heavy by now due to the periodic additions of food waste and bedding. It is likely that you will have a 6-inch layer of vermicompost that is ready to harvest. Try waiting until the end of the 6th month, if possible!



# The Ecosystem In Your Urban Worm Bag

## Worm Reproduction Inside Your Urban Worm Bag

In optimal conditions, worms will multiply very rapidly inside your Urban Worm Bag. Earthworms are hermaphroditic, meaning they possess both male and female reproductive organs. This means any two sexually-mature earthworms of the same species may mate with one another. The worm reproduction process is fascinating. Two worms will intertwine around each other and form a cocoon, which will normally contain 3 baby earthworms. This may happen up to 3 times per week.



It will take 21 days for the cocoon to hatch. After hatching, it will take approximately 42 days for the worms to reach sexual maturity, as evidenced by the presence of the fleshy band around the earthworm called a clitellum.

In optimal conditions, the worm population can double every 3

months! An interesting fact is that the worms will stop reproducing when they reach the maximum density, around 2 lbs per square foot.

This means that you will never have an overpopulation of worms. They regulate their reproduction on their own and adapt it to the surface area and food they have.

## Other Organisms Inside Your Urban Worm Bag

Aside from the earthworms and microorganisms that you intend to grow inside your Urban Worm Bag, you will undoubtedly observe other organisms that you did not intend to find.





These may include fruit flies, gnats, mites, ants, beetles, centipedes or roly-poly (or pill) bugs.

These tiny animals are often effective composters themselves and should generally be considered to be normal parts of the vermicomposting ecosystem. The Urban Worm Bag, when fully closed, does an excellent job of keeping them inside your worm bin. But in some cases, the presence of these organisms may indicate less than optimal conditions.

**Ants:** The presence of ants indicate your Urban Worm Bag is too dry.

**Gnats, mites, and fruit flies:** the presence of unwanted numbers of

gnats, mites, and fruit flies typically indicate a worm bin that is too wet. If you see these organisms, you should stop feeding and add dry bedding like shredded paper to help absorb excess moisture.

***Note:** Many of these organisms were not necessarily attracted to your bin. In many cases, their larvae were already existent on the food waste that you introduced to your Urban Worm Bag.*

## Frequently Asked Questions

### Can I Use the Urban Worm Bag Outside?

Technically, yes, but the worms won't be able to tolerate extreme hot or cold temperatures and should be protected from

direct exposure to sunlight and precipitation. It is recommended that the bin be kept indoors.

### My Urban Worm Bag Is Dripping. What's Going On?

Your Bag has been overfed or overwatered. A properly-maintained worm bin should not be draining an excess of water, also known as leachate. Add dry bedding or shredded paper (see "Moisture").

### I Am Finding That Worms Have Escaped Through the Bottom Drawstring. What Should I Do?

Finding a few worms in the detachable bottom below the drawstring area is somewhat common in the beginning when your Urban Worm Bag is not full. As your Urban Worm Bag fills up, the bottom should start getting a

little drier and the worms should start gathering towards the top of the Bag where the fresher waste is. Simply move any worms you find in the bottom back to the top of the bin.

## How Much Vermicompost or Worm Castings Can the Urban Worm Bag Produce?

Your results are dependent upon too many variables to give you an accurate number. However you can use commonly-known rules of thumb to get a very rough estimate.

Conservatively, worms can eat 25-33% of their own weight per day and at maximum density, you will have around you may have around 4-6 lbs of worms.

So an Urban Worm Bag stocked with 4-6 lbs of worms will be able to

process roughly 2 lbs of food waste per day under good conditions, roughly 10-20% of which will exit the worm in the form of worm castings.

## Won't the Castings Just Fall Out?

Despite the heaviness of vermicompost, it is also slightly compacted towards the bottom of any worm bin and will experience "bridging" where the vermicompost doesn't necessarily flow to the lowest point like water.

Due to both bridging and the tapered design of the Bag, the weight of all of the vermicompost will not be resting directly on the bottom of the Urban Worm Bag.



## How Can I Use My Worm Castings?

This is up to you! Most people prefer to use worm castings as a soil amendment at a 10% substitution rate for a growing medium or apply it directly to the base of their plants as a top dressing.

You can also brew worm tea by mixing water and a compost tea bag of worm castings at roughly a



1% concentration and apply as a soil drench or a foliar spray using a handheld low-pressure sprayer. This is an incredibly economical way to use worm castings.

## What Should I Do About Fruit Flies or Fungus Gnats?

If you notice an overpopulation of flies in your worm bin, they might be fruit flies or fungus gnats. Fruit flies are brownish with red eyes and are very common. You have certainly seen them if you have left fruit or fruit waste to rot in your kitchen or trash can.

- Fungus gnats are smaller, black and their larvae are very hardy in comparison to fruit fly larvae.
- Flies are often a sign that you overfed your worms. Microbes did not have time to colonize the waste

● and flies started to develop. There are lots of ways to deal with them:

- You can start by using a vacuum cleaner to get rid of the overpopulation of flies.
- Then remove the last layer of fresh organic waste or simply bury deeper in your worm bin.
- Add some more bedding and put a layer of paper on top.
- Create a fly trap by putting a bit of apple cider vinegar and a drop of dish detergent in a bowl that you can place inside the Urban Worm Bag.

Then stop feeding for a few days and observe the results. When flies and gnats are no longer present, resume feeding in small quantities until you are sure the problem is solved.

- If flies are still present you can spray neem oil twice a day for two weeks. This natural insecticide is quite effective and will not harm your worms. However, we recommend using it as a last resort.
- To prevent new infestations, cut the waste in small pieces so that it will be quickly processed.
- Avoid feeding large amounts of fruit waste at once, especially in summer.
- Also consider freezing food waste to kill fruit fly larvae.
- Add bedding on top of your organic waste.
- Simply stopping feeding for a few days may solve your problem as the worms will not starve. But the flies will!



## What Should I Do When I Go on Vacation?

In most cases, your Urban Worm Bag can be left alone for days or even weeks. Ensure that your worm bin is protected from extreme conditions and consider adding bedding and more food waste (if you are certain that the worms are processing it efficiently).

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If you're not able to feed for more than 3 weeks, ask a friend to spray small amounts of water onto the surface of the bedding and food waste once per week to ensure the bin is staying sufficiently hydrated.

And enjoy your vacation!

## What If My Worms Have Died or My Urban Worm Bag Has A Foul Smell?

A properly maintained worm bin should not have a foul odor. If the Urban Worm Bag starts to smell, stop feeding, add dry bedding and consider removing any foul-smelling waste.

If your worms have died and your worm bin does not have a foul odor, it is likely that your bin got too dry.

If your worms have died and/or your bin has a foul odor, it is likely that your bin became too wet, as excess feeding and moisture created a toxic environment for the worms.

## Can I Use the Urban Worm Bag As Part of a Commercial Operation?

The short answer is “yes,” but the Urban Worm Bag is designed more for home use.

You could use several Urban Worm Bags to create “small batch”-style castings with different feedstocks to create different vermicompost, but a mid- to large-scale operation should be considering an industrial-level continuous flow-through system like the kind offered by Michigan SoilWorks. You can find more information on larger systems at [urbanwormcompany.com](http://urbanwormcompany.com).



## Are You Happy With Your Purchase?

We would very much appreciate an honest review on Amazon or wherever you purchased your Urban Worm Bag!

Your feedback will be highly appreciated and we will do whatever we can to provide you an incredible customer experience.

Please e-mail us at [support@urbanwormcompany.com](mailto:support@urbanwormcompany.com) with any questions or concerns.





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