



GUIDANCE NOTES

For A Successful Worm Habitat

Worm Habitat
Grande Range

Why Vermicomposting?

We are often asked, "Why choose vermicomposting vs traditional (thermophilic) composting?"

- Vermicomposting uses an aerobic process which does not produce methane because methane-producing microbes are not active in the presence of oxygen. Composting in anaerobic conditions releases methane into the atmosphere which is approximately 26 times more potent than carbon dioxide as a greenhouse gas.
- Vermicomposting can take as little as half the time of the thermophilic composting process.
- The types of microbial communities that develop during the composting and vermicomposting processes are significantly different. The microbial populations in vermicast are substantially larger and more diverse than those in a normal (thermophilic) compost.
- Vermicast contains higher nutrient concentrations than conventional compost.
- Vermicast improves soil health and fertility, increases the nutrient content and microbial life of soils, improves water retention, and reduces the need for fertilizers and pesticides.
- Vermicast helps plants resist attacks by pathogens, insects, and parasitic nematodes.



A Few Basics On Worms

Looking after worms is quite simple and forgiving, and if they are kept happy, they will continue to breed up and work 24/7 to achieve your objectives!

However, they are living animals and have some basic needs that must be met for them to survive and even better, thrive indefinitely.

A few facts about your hard working worms:

- They have well-developed circulatory, digestive, nervous, excretory, muscular, and reproductive systems.
- They are cold-blooded (meaning they can't regulate their body temperature)
- They are hermaphroditic (yet takes two to tango)
- They have no lungs - they breathe through their skin.
- They're susceptible to dying if their skin dries out.
- They are light sensitive; exposure can cause paralysis within about one hour.
- They can die if the temperature is too high or low. As temperatures rise higher or drop lower than their comfort zone, worms' activity will diminish and they will consume less food.
- They will reproduce and self regulate numbers to the size of their environment. Given the right conditions they should double in numbers once every three months.
- They will eat anywhere between half their body weight up to their body weight of organic matter a day, averaging 50% i.e 1kg of worms will process on average 500g a day.



Introducing Worms Into Your Habitat

- Before introducing your worms to their new habitat ensure you recheck the moisture levels of the bedding, if it has been a while since you completed the set up it may have dried out. Complete the 'squeeze test' - a few drops of water should come from the bedding when squeezed in your hand.
- Your worms will arrive in a bag, a box, or both. Gently empty the worms and bedding onto the top of your worm bedding and the worms should fairly quickly burrow into the bedding to escape the light.
- Bear in mind that they will take time to adjust to their new home. It is highly likely that the worms were raised in bedding that differs from yours, and they have also just endured stressful transport of some sort. Shaken up from the ride and placed in an unfamiliar environment, they may initially try to escape the habitat.
- As time passes, the worms will adjust to the bedding and stay in it on their own accord.
- There will only be minimal worm activity in the first few weeks while the worms settle into their new home. Start introducing food in small quantities during this period - refer to What to Expect in the First 12 Weeks.



Managing Your Worm Habitat

There are several characteristics you should look for on a daily basis that indicate you have a healthy worm habitat environment and your worms are thriving:

- It smells earthy like the forest, without bad odours.
- The worms are actively eating their feed (if they are clustered together on the upper sides or trying to get out, something is wrong).
- The contents are moist but not soggy.
- The worms should have moist, glistening skin.

MOISTURE

- Worms require adequate moisture to help them breathe through their skin, your worm habitat needs to maintain a moisture content range of 60 to 85 percent.
- You can check the moisture levels by performing the 'squeeze test' - get some of the bedding in your hand (preferably with no worms!) and squeeze, if only a few drops of water come from the bedding your moisture level is spot on.
- The best way to apply water to your worm habitat is as a mist or fine spray.
- If you pour water into your habitat, you won't be able to control how much it soaks into a given area.
- Ideally, your habitat should be the wettest at the surface and get increasingly dry the deeper you go.
- A cover or 'worm blanket' can assist in sustaining adequate moisture.



OXYGEN

- Worms can survive in relatively low-oxygen and high-carbon-dioxide environments, however, if there is no oxygen, they will die.
- Low-oxygen conditions may occur if a worm bin is too wet or if there are excessive amounts of decomposing feed in an enclosed space (i.e. don't overfeed!)
- Gently aerating the bedding regularly with a garden fork or similar can assist in keeping a good supply of oxygen through the habitat.

TEMPERATURE

- Compost worms generally live comfortably and breed at (bedding) temperatures between 13-29°
- They can tolerate bedding temperatures between 4-32°C but will have lower activity outside this range.

Managing Hot Temperatures:

- Add thinner layers of feed to minimise the heat generated by decomposing food.
- Limit feed to certain sections of the bin so that there are cooler areas where the worms can go to escape decomposing, heat-conveying food.
- Your instinct may be to cool down the bin by adding water, but that can actually cause the bin to heat up because water will fill in the air pockets in the bedding, bringing about anaerobic conditions. Instead of spraying water to soak the bedding, give it a fine mist.
- Freezing your scraps before adding them to your habitat can assist in dropping temperature levels.
- Always ensure your habitat is located in a fully shaded area.



Managing Cold Temperatures:

- Increase your nitrogen (greens) inputs as decomposing food generates heat
- Insulate the habitat in some way to assist with keeping in heat
- Relocate the habitat to an area small amounts of sunlight
- Add a top layer of moist carbon input or a blanket to assist in holding warmth into the bedding
- The large thermal mass design of our habitat design assists in managing temperatures changes as it allows space for worms to burrow to, allowing them areas to escape extreme heat or cold

PH

- The pH of organic materials indicates whether it is acidic (1 to 6), neutral (7), or alkaline (8 to 14).
- Worms will grow in a pH range between 5 and 8, though acidic conditions can create problems in the worm bed.
- Add a light sprinkling of dolomite every couple of weeks to keep pH between 6.5 and 7 if possible.
- If you're habitat becomes too acidic removing any excess decomposing food waste and increasing your carbon (browns) input can assist in offsetting the pH.



FOOD / FEEDING

- Do not overfeed. Do not add another layer of feedstock until the majority of the first has been consumed. If you put fresh food on top of uneaten food, the worms will come to the surface to eat the fresh stuff and leave the older food to rot and become anaerobic. So patiently wait for your worms to finish devouring what you last fed them.
- Worms have tiny mouths and no teeth, so they can't take a bite of food like we can. They can only manage to consume microorganisms and tiny bits of organic matter that can fit into their minuscule mouths.
- Increasing the surface area by reducing the size of your inputs can help the worms process your waste more efficiently.
- Cut, shred, mulch, blend your waste inputs as much as is practicable (worms love smoothies!)
- Freezing your scraps breaks down the cell structure which can make it easier and faster for the worms to process (and helps keep them cool in summer)
- If you put a thick layer of food in the habitat, the lower part will likely become anaerobic and the worms won't be able to process all of it. A thicker layer also has the potential to heat up, which can kill your worms. We recommend aiming for about a 2.5cm thickness of feedstock to avoid both overheating and overfeeding.
- Worms will eat anything organic but require a good balance of Carbon:Nitrogen inputs. Refer to our Worm Feeding Guide.
- Did we mention not to overfeed...? This is one of the most important things to remember for maintaining a happy habitat.



YOUR WORMS' FELLOW COMPANIONS

- You'll soon discover that worms aren't the only living critters in the worm habitat. These critters likely hitched a ride on the organic materials you added to the bin.
- Most other critters will not harm your worms, so don't worry about them or try to control their populations. These decomposers are part of the soil food web and will actually improve the productivity of your worm habitat.

THE FRUITS OF YOUR LABOUR

- After 3 months you should be ready to harvest your first castings.
- You should notice that the contents of the Grande have raised and should now be closer to below the vents.
- To harvest the cast pull the scraper system back and forth to agitate the castings allowing them to fall into the compartment to be removed.
- Ensure you harvest regularly as this will prevent the castings from binding too strongly and ensure an easy process.
- Your 'black gold' is now ready to be used on your garden!
- You can mix your castings with water to create a 'worm juice' for easy application to your garden/soil.
- The leachate that passes through the habitat can be emptied using the tap.
- This liquid will have some beneficial microbes as it has passed through the castings on its way down, however the millions of beneficial microbes are held within the castings. You can put this liquid straight onto your garden, or we recommend putting it back into your habitat for assisting in keeping it moist and adding the nutrients back into the environment.



Troubleshooting

During your daily inspection of your worm habitat, it's also smart to watch for conditions that indicate something is wrong. Here are signs that something is amiss, indicating some troubleshooting is required:

Worms are dying or leaving the bin

If your worms are crawling away or dying, there are several possible causes: extreme temperatures, inadequate oxygen, lack of food, or excessive moisture, dryness or elevated levels of salts or ammonia in the feed.

Mold is forming

It is normal to see a little bit of mold in a worm bin, but a lot of mold indicates a problem in the habitat. Overfeeding is the primary cause of an overabundance of fungal growth. The second most common cause is acidity.

Flies are swarming around

If your bin is attracting flies, it could be due to overfeeding or exposed food scraps. Reduce the quantity of feed you are offering your worms; if you are feeding food wastes, try covering them with bedding or a cover.

Bedding is drying out

Ensure your testing your bedding moisture levels regularly with the 'squeeze test, if your bedding is too dry give the bedding a fine mist.

Excess liquid is collecting at the bottom of the habitat

If excess liquid is leaking out of the bottom of your habitat, you have added too much moisture. To remedy the situation, remove overly moist food scraps, add dry bedding, and take the lid off and let the habitat air out.

The habitat smells bad

Your worm habitat should smell earthy like healthy soil. If it has an unpleasant odour, something is not right. The smell is likely due to inadequate oxygen, excessive moisture, and too much food. To eliminate odours, mix in dry bedding and leave the lid off for a while, allowing your system to air out.

