

Vermiculture

Windrows on the ground are the easiest and most cost effective way of building worm farms, you can make them more complicated with experience, but really all you are limited by is space.

Benefits include;

- improving soil's physical structure;
- improving water holding capacity;
- stimulating and inoculating soil micro-organisms;
- adding plant hormones such as auxins and gibberellic acid, and important enzymes such as phosphatase and cellulase;
- attracting deep-burrowing earthworms already present in the soil;
- enhancing germination, plant growth, and crop yield;
- improving plant health and quality;
- improving root growth and structure;
- reducing the need for fertilisers, herbicides and pesticides

Resulting in resilient, healthy and profitable enterprises.

WHICH WORMS?

There are a few different species suited to composting, the most common and easily available is the tiger worm, also known as the red wiggler (*Eisenia foetida*).

Tigerworms are hardier and reproduce more quickly than other composting worm species.

SITE SELECTION

Vermiculture is pretty simple really; all worms need is food, water and air, just like your soil microbes.

Choose a site with the following attributes:

- Gently sloping to ensure water doesn't pond (and to meet any local regulatory standards)
- Close to a water source
- Hard packed to provide a robust surface for machinery.
- Design so castings can be harvested from with end of the row with ease

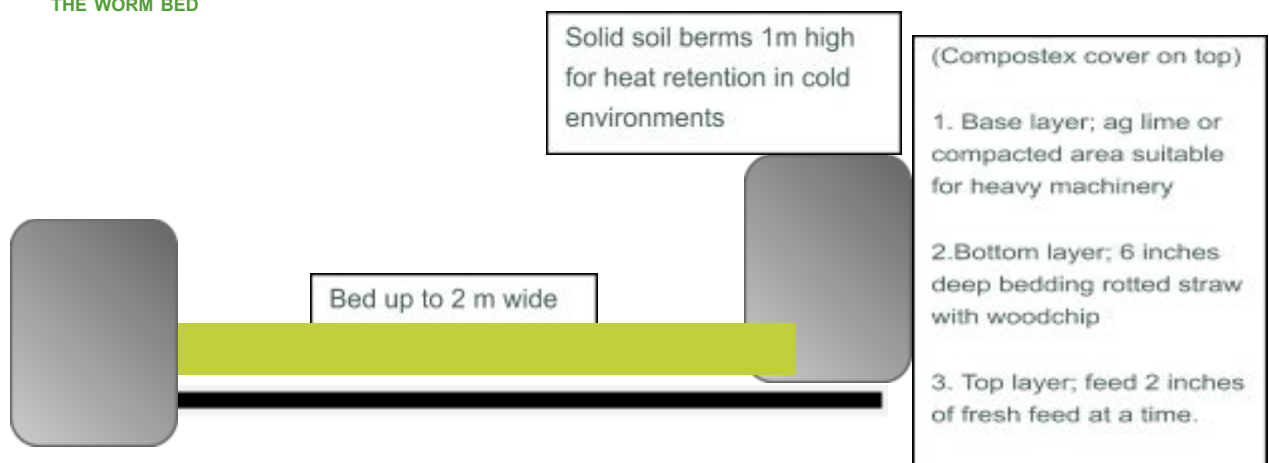
The site needs to be prepared to ensure all weather vehicle access and that any leachates are contained. A base course of metal and lime be built across the site to assist drainage and allow vehicle access if needed.

Dig a trench 1 meter deep by 2 meters wide, with a slight camber towards the openings. The windrows shouldn't be any wider than 2 meters to discourage people from walking on the beds, and ensure its easy reach to rake food. We want to make enough castings to supply the entire farm, 30 meters long will be more than edequate.

When starting a general rule of thumb is to add 1/2kg of worms per square meter of windrow. They will build their numbers up quickly if being fed well.

Start the beds with 6 inches of bulking materials, such as a mix of white wood chip (poplar), straw and hay etc- what you need here is a material that will break down slowly over time while allowing airflow. It would be good to find an ongoing source of white wood chip or invest in a chipper to make your own. Add the food waste in a strip 1 m wide down the centre of the windrow. You can then start to add food waste and manures, preferably feed in long strips less than 2 inches deep. It is better to feed little and often along the bed, than feeding in sections.

THE WORM BED





This worm bed in Australia is 1.5m high (those are big birds looking for worms!)

Management Tips

Feed the worms, little and often (ideally twice a week), you can feed worms solely on manure, however to make a good quality end product white wood chip (or very aged spruce chip) is recommended as a base. This will create an excellent biological material. Feeding often helps to build vermicast and worm numbers as quickly as possible. Worms can go months without food.

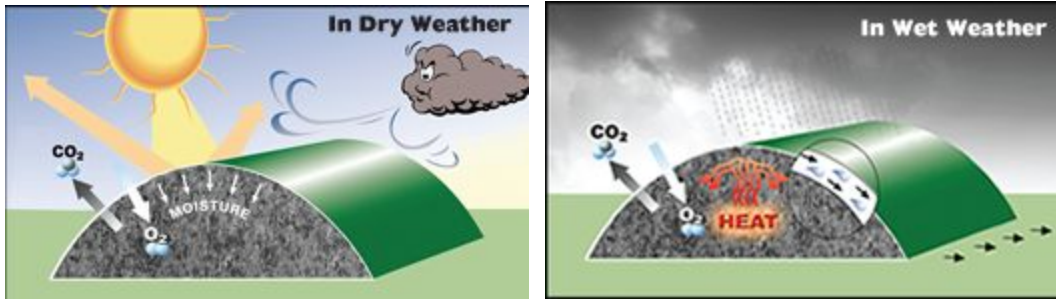
Temperature; measure temperature- optimal breeding temperature for Red Worms is 15-20 C, while the optimal temp for maximum growth and waste processing ability is closer to 25 C. Tiger worms can survive to near freezing. If too hot, aerate and water, if too cold add 1/2 cup molasses per sq yard, or fresh grass clippings in a strip HALF of the bed. Avoid adding too much food at once, or adding new food on top of food which has yet to be processed, composting will heat up the bed. In cold environments worm rows can be built in between solid earth berms to keep worms from freezing.

Worms require calcium; add a dusting of ag lime once a month.

Keep the materials moist, you may need to add more water in summer.

Feed Materials could include; grass clippings, manure, wood chip, feedlot wastes, sawdust, seaweed, leaves, swedes, pumpkins, paper pulp, cardboard, paunch, silage, etc etc.

Covers: I recommend compost covers for a variety of reasons; reduce waterlogging, reduce water loss, ensure worms work up to the surface in the day and keep the beds warmer. ComposTex covers are the best covers on the market- I have been using the same covers at home for over 10 years now and they still show little signs of wear.



ComposTex compost cover (also known as “compost fleece”) is a completely breathable, non-woven fabric (or geotextile membrane) made of 100% UV-resistant polypropylene that completely sheds rainfall from covered windrows. See <http://www.cvcompost.com/ccovers.php> to order.

Whether used on a short-term basis or for continuous protection through an entire compost cycle, ComposTex will protect piles from excess rainfall, thereby ensuring optimum aerobic compost conditions and preventing the saturated/anaerobic conditions that produce unpleasant odors, nutrient-laden leachate, and wet compost that increases costs associated with screening, bagging, and transportation.

We can talk more about putting worms to bed over winter after you get set up.

APPLICATIONS

Vermicompost can be used in the following ways;

- As an additive to compost tea;
- As a liquid extract at 2 #/acre;
- Applied to the soil as a solid soil conditioner 750 lbs/acre every third year;
- Humic and fulvic acids can be extracted from the vermicast.

Worms can provide additional income streams:

- Vermicast is commercially available from \$250/ T or up to \$2000/T for high quality products.
- Worms are typically sold for \$55-\$80 per kg or \$30 for 250 grams.
- A certified organic humic/fulvic acid is a very high value product.

All of the successful worm systems I’ve been involved with and seen around the world use a low-tech, low-capital investment approach. I recommend not investing in large capital costs until you reap the financial benefits from the use of vermicast. The up-front investment to establish the worm beds will be able to provide a measurable economic return within 3 months of its application to land.

All the best,

Nicole Masters