

Styles of worm farms

This is a very condensed summary of my research on worm farms. I have now read several books, many web sites, and various blogs and “worm digests” to give you my take on the matter. There are 4 basic *styles* of worms farms we see being used in the world today:

- Simple bins (first commercial style for sale ten years ago, plastic bins with holes in bottom for drainage and sides for aeration);
- Stacking tray bins (replaced simple bins with larger capacity and holes between trays to allow worms free movement;
- Continuous flow systems (mid-scale size e.g. schools, cafes; has false bottom for vermicast to “flow through continuously”);
- Windrow – lateral movement systems (most common style used in large-scale/industrial size worm farms).

Simple bins are often made of plastic, and sit on trays to collect the liquid run-off. Because the liquid is so nice on plants as a fertiliser, collecting it is a good thing for gardeners to improve their soil and plant life. However, if the liquid is not sought after, you can simply put the bin on the ground, so that the holes drain automatically into the soil directly (which means less work). Plastic is not an ideal material, as it does not absorb water, and tends to “sweat” making these systems tending to be overly moist. Capacity is limited, and it remains a real “container” - so die-off is possible if the environment becomes unsuitable to the worms (sludgy, acidic, hot). Bins also tend to be smelly when pockets become anaerobic (no oxygen).

Stacking trays are nice because they give you more trays, and therefore more recycling capacity. The bottom tray catches the liquid, and if a tap is included, then the removal of the liquid is easy – making this an ideal system for the keen gardener. Trays stack and the worms move freely between the trays, and the operator has to move the trays up and down the system in order to make room for more waste, and harvest the vermicast. I like these systems, but admit – they are tricky – because again, they are containers, and vulnerable to temperature variations and acidity. You need to fluff in air, keep it out of the sun, and add lime regularly (e.g. handful twice a month). And likely you will have to hand-sort the worms to remove your (worm) stock because they’ll keep living in the vermicompost until it’s thoroughly processed (which can take up to 2 years!).

Continuous Flow systems are mid-scale size, deep bins with a false bottom made of mesh, designed to provide continuous flow of vermicast out the bottom. If run perfectly, the material should have few worms in it, meaning no need to hand-sort. To accomplish this, you need to feed large amounts of food waste, followed by a thick layer of bulking material, every two-three weeks, and not add more waste until the old stuff looks fairly composted. The average household does not have waste-flows like this, so for this reason I don’t think this “fiddly” feature is useful for domestic systems. However, I’ve found it fascinating all the same, and have been “beta testing” one at my house for the last six months. Having the false floor has not resulted in worm-free vermicast, and I have to scrape it out regularly (which kills worms). On the good side, some liquids seep down to my tray (and that’s cool). I’m feeding it every two weeks with 2x 20 litre buckets of food and 20 L bucket of leaves from the gutter.

The basic windrow is the most popular style in use today, especially in large-scale industrial vermicasting sites, which process tonnage. Imagine a row 15 metres long, 2 metres wide, front-end loaders, sprinkler systems, and piles covered with tarps and tires (to weigh down the tarps). The feedstock is predictable, and it’s relatively easy compared to smaller “containers”. In the windrow setting, temperatures must be monitored closely because large piles can heat up from the bacterial action naturally occurring to break the food down – fortunately the worms can dive to cooler areas. Any system that sits on the earth is essentially a “caged” or modified windrow – such as tires, and our own Hungry Tiger range of worm farms. By sitting on the ground it’s an easier system to run because no heavy trays, the liquids drain easily and the worms can dive deep where it’s cooler if necessary.

Comparison of Worm Farms – in my humble opinion.

Name	Style	Price	Capacity*	Features	My Opinion* - Comment
Tire stacks	Windrow (a caged vertical pile). D.I.Y. easy!	Free, plus cost of worms	6-8 litres per week. 1-3 people Lasts forever!	Tires can sit on the ground or slanted on corrugated roofing to allow collection of liquid runoff. Personally, I don't like the risk of cutting my ankles on the roofing material, and find it does not drain well. Free is good! Get's tires out of landfills.	Opening in center can fill quickly, so best to have two separate stacks (2-tier). Recommend a good lid, and place directly on ground. Can be hidden behind skirting. Rubber sides make for excellent insulation from hot and cold weather, though some people may not like composting in rubber. My favorite DIY. Great for dog poos – use compost on non-edibles only.
Rein Can-O-Worms (AUS made), Worm-A-Round (NZ), and Square wormery.	Tray-based bins Buy from Retailer or Mail Order	\$120.00-240.00 plus cost of worms	6-8 litres per week. Worm-around is larger, 8-12 litre per week. 1-3 people Square Wormery becomes brittle from UV after 2 years, and can crack. Can-O-Worms can tip and legs warp.	Food waste is placed in plastic trays that stack on top of each other. Trays are moved within system, demoting as they fill up and new trays added. Worms move freely between trays. Liquid is collected in bottom, used for garden plants. Tap at bottom allows for easy harvesting of liquids. Can be run indoors, or moved around garden. Tidy, and great for demonstrating worms. Takes up to a year to be at maximum efficiency.	More sensitive to temperature variations – heat kills worms, so place out of sun. May need moving in winter – keep out of cold wind. Space is a premium, so capacity is an issue – perfect for 1-2 people, and takes more work to get more waste through. Trays can be heavy and awkward, which need to be moved every few weeks. Trays not very deep, so avoid hard stuff like citrus, meat or large amts of paper. Best cut up food scrapes, at least at first. Needs a rinse every other month to keep air holes in legs clear. May need to empty a tray into styro-bin to finish final stages of processing in order to make room for your weekly waste. Can be tricky to maintain pH and moisture. Needs regular fluffing to keep worms “breathing”.
Bath tubs Can go smaller with fish bin, styro bin, plastic box, or drawer.	Mid-size Bin (still a container) D.I.Y. easy!	Free, or \$20 for Tub from recycler, plus cost of worms	10-20 litre per week plus garden material for bulking (tub only, less in small bin) 2- 6 people Lasts forever	Covered horizontal pile, set on angle for drainage into a bucket of some kind.	Can be tippy and drainage can be an issue, so recommend installing into a timber frame off the ground at an angle. Can be hidden with skirting or trellis, and storage built in. Takes more space in garden. The experts say that Wood is the preferred worm farm material because it absorbs liquid and expands/contracts. Small have found bathtubs or plastic bins are wetter systems, and need more frequent pH corrections with Lime and blotting paper to keep it fluffy and dry.

*Capacity based on my testing, not mnfr's statement. Litre used instead of kg due to weight variation is waste – volume 2 litres = 1 ice-cream container.

Name	Style	Price	Capacity*	Features	My Opinion* - Comment
<p>Wooden Bin Systems, 3 sizes from Earthly Delights:</p> <p>Hungry Tiger</p> <p>Lil' Pig</p> <p>The Beast.</p>	<p>Small & Mid-size caged Windrow.</p> <p>Buy direct ex-factory</p> <p>Taller unit "Hungry Tiger" can be converted into Continuous Flow Design upon request</p>	<p>\$150.00-260.00</p>	<p>15-60 litre per week plus paper and garden waste</p> <p>2-10 people</p> <p>Bottom edge begins to rot after 2 years – can be shaved off to renew life.</p> <p>Lid can warp but still works.</p>	<p>Covered, vented horizontal or vertical wooden bin that sits on the ground. Food waste added into voluminous box, layered with paper and/or garden waste.</p> <p>No trays to shift, secure lid means pet's can't tip over.</p> <p>Harvest worm castings for garden soil using the simple "split harvest" method.</p> <p>Trap door in 900mm high Hungry Tiger makes harvesting casting easier.</p> <p>"Like having a big tummy in the backyard"</p>	<p>Vermicast (fertiliser) can be harvested after 8 months once deep base established, then every other month. No direct access to liquid leachates but can be made fresh from harvested vermicast.</p> <p>Deep base will recycle more foods – such as meat, citrus, onion. No need to cut-up food scraps, or be selective in food scraps.</p> <p>Can attract flies, but can be corrected with procedures to prevent, or control problem.</p> <p>Can heat up or go compact, so needs occasional watering and "fluffing". Drainage controlled by being in contact with soil. Comes with a system that is easy to follow, and useful supplies that make it easy to succeed, plus phone support. Root intrusion avoided with regular harvesting vermicast.</p> <p>When sited near Garden Compost, worms will also move to inhabit this compost.</p>
<p>Black compost bin from hardware store, or Garden Compost Pile</p>	<p>Small-size Windrow – (caged)</p> <p>DIY or Buy</p>	<p>Free (garden compost pile) - \$200, plus cost of worms.</p>	<p>1-4 person</p> <p>Plastics can become brittle in UV but otherwise long lasting.</p>	<p>Black plastic bin sits on earth and has vent holes and trap door.</p> <p>Earthmaker® has three levels where worms go into bottom level. Levers and layers control flow of compost.</p> <p>Garden Compost takes mostly garden wastes like grass, leaves, weeds, and tree branches.</p>	<p>Originally designed for "Hot" composting using microbes (not worms) but rarely do people achieve heat in pile due to lack of enough layered inputs. Worms move in voluntarily or by your specific addition.</p> <p>Vent holes allow easy entrance of flies and air, so tends to dry-out quickly: needs regular watering, and needs covering to slow down evaporation.</p> <p>Rotate feeding sites when adding kitchen food scraps.</p> <p>Can invite rats, dogs, birds into bin/home.</p> <p>Large volumes of grass heats up and can kill worms.</p> <p>System improved/speeds up by Compost Worms, but not ideal when large volumes of grass or chipped wood are involved. Often slow system without worms.</p>