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The Cover picture is a Victorian Cartoon lambasting Charles Darwin for his evolutionary theory and his life long love of worms, "nature's plough's".

The DIY Wormery Manual

Introduction

First of all, I am not going to waste too much of your time telling you why we should all use worms to reprocess our organic waste. This is a "How to" manual.

Most people these days, are aware and concerned about environmental matters but, even though the majority of people, when asked, think that recycling is worthwhile, still only around 15% of dustbin contents are recycled.

We all know compost heaps are a great way of dealing with garden waste but when it comes to kitchen waste there is an even better way of using it, (without attracting flies and vermin to your compost heap).

The good news is that this is not just a way to do your bit, this can also save and earn you money. Having a Wormery is an easy and environmentally friendly way of converting ordinary garden and kitchen waste into a fantastic compost known to gardeners as 'Black Gold', as

well as a concentrated liquid feed, all through the natural and organic action of worms.

The information in this manual will not only help you save & make money, it will also give you the opportunity to help your family, friends and your local community. In fact, it will go a long way to making the world a better place for everybody and everything living on it.

Best Wishes

Gareth Hogan

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The Basics

We shall start by looking at the overall process. These practical basic principles will give you a general understanding of how worms work.

Then we will look at how this can be applied to building a simple Wormery and then the ways it can be developed. We shall then look at how to combine all this in building a "commercially viable" Wormery that can be sold.

After that we shall take a closer look at what worms to use, how to keep the worms healthy and what to feed them.

Finally, we shall explore the ways you can make money with your new found expertise.

How it works

The humble worm has an amazing ability, not only to dispose of your waste food but also to turn it into vermic compost, more commonly referred to as "worm casts" or "Black Gold". This is one of the richest natural peat alternatives.

The castings themselves are odourless. Nutrients in the worm castings are organic, which makes them more easily accessible to the plants and a natural organic alternative to those chemical fertilisers which have a nasty habit of leaching through sandy soils into our drinking water.

Another by-product of this process is a valuable liquid soil fertiliser called "Leachate" which contains high quantities of nitrogen, phosphorous, magnesium, potash and calcium. This is so rich that it has to be watered down as much as 1 part feed to 10 parts water. It makes a wonderful liquid feed for both indoor and outdoor plants.

The most basic and simplest Wormery can take the form of a box with drainage holes. This houses a colony of "composting" worms, which like nothing better than to spend their days rooting through and munching on your kitchen waste.

The major problem with this method is separating the compost and the worms, when you want to collect the valuable castings, referred to by worm enthusiasts or "vermiculturists" as "harvesting". There are two methods that you can use.

You can wait until the worms have eaten most of the waste and then tip it all out on a sheet or you can try separating the worms and compost to different ends of the box.

Tip and Sort

(basic and time consuming but great for kids!)

Place a large sheet on a table or the floor. Put on some rubber gloves and gently empty the entire contents of the box onto the table. Next, shape the compost into cone shaped mounds. You can then use sunlight or a bright light shining down on the mounds, to make the worms travel to the bottom interior of each mound.

Give them about 10 minutes to escape downwards from the outer layers and then start gently scraping off these outer layers of the vermi-compost until all you have left, are the worms at the bottom. If you find any small lemon shaped cocoons, these are baby worms, so gently save them, to add back to the box when you are ready. Clean out the box and put in fresh bedding, replace the worms and their cocoons and start again!

Divide and Conquer!

The other way is to shift all the old bedding, casting and worms to one side of the box. Add your fresh bedding to the empty side. Bury in some fresh scraps of kitchen waste into the new pile and cover it up for a couple of weeks, leaving the old bedding pile uncovered.

Check after a week or two and you will find that the worms have migrated to the other end of the box, that has the new bedding. Harvest your vermi-compost, check gently for babies and cocoons and then fill the empty space with fresh bedding and waste..

So, now you have a basic idea of what is entailed, we will look at constructing some wormeries that will make it easier to harvest the compost and are less stressful on the worms.

How to make a basic stacked Wormery

We can develop this simple box idea into a set of stacked boxes that will make collecting the liquid feed and harvesting the compost a lot easier, while at the same time reducing the stress on the worms and also encouraging them to breed to their full capacity.

This next stage of designing and building a Wormery consists of a series of containers that sit on top of each other. The Wormery can be kept inside or out of doors but then parts of it will need to be made of waterproof material.

The bottom container is the base, which has a tap on the outside. We will call this the sump. This collects the liquid waste from the compost. As the liquid travels through the waste in the Wormery, it absorbs nutrients and becomes a very strong and powerful plant feed. The quantity of liquid

feed will of course depend on what sort of waste you use to feed your worms.

Vegetables hold more water than bread but if you use too much paper, this will soak up the moisture and hold it. This bottom container is where you can siphon off the liquid feed/organic fertiliser that is so high in nutrients. Remember, this should be watered down at least 10 parts water to 1 part raw feed before you use it on your plants.

Next you will need a lower chamber, that will rest on this base/sump chamber, this is where we will put the bedding and the worms to start with. It will need drainage holes in its base, to allow the liquid feed to drain through into the sump.

Above the lower chamber will go another close fitting chamber with holes in its bottom. This is because as well as providing a way of draining off the liquid feed the worms produce, these holes will also allow the worms access to crawl through.

You can of course, with time, keep adding more levels with similar containers, as needed, although most people use

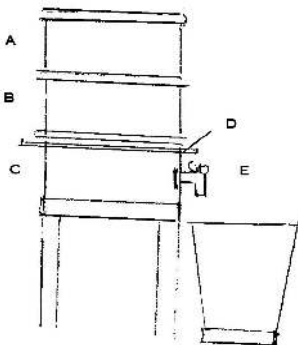
only three. Your kitchen waste is added to the lower chamber, above the base sump. To begin with you only need to have the sump and one other container above it. This lower chamber is where you put the bedding layer. This is where the worms live and on top of that you place a layer of food in the form of kitchen waste. As the worm castings begin to build up, you keep adding layers of kitchen waste, for the worms to wriggle up into and eat. When the box is full, place the next empty box on top of the stack and keep adding layers of kitchen waste until that next top chamber is full as well.

As the worms move up into the next level, it is time to remove the lower chamber (from above the sump) from the stack and use the worm castings in your garden. The next chamber, that was above it, is now resting on the base sump chamber and becomes the new base chamber. You then replace the empty container on top, for your next lot of kitchen waste and just keep repeating the process. This way the containers are rotated with each one becoming the lower chamber (above the sump) in turn. This is all there is to the simple basic system that can produce such a valuable garden fertiliser and soil enhancing food.

A simple stackable Wormery using Plastic Boxes

What you will need

Get three, stackable plastic boxes. A plastic tap with washer and nut. Some bricks, a small base or table to place the boxes on, which will need to be high enough that you can get a bucket or container under the tap to drain the liquid. You will need tools to cut and drill the boxes to make holes for the worms (and Drainage), (15mm-20mm) and a marker pen. If you do not have a lid for the top box in the stack, you can cover it with a piece of Hessian or underfelt.



- A - Top Chamber
- B - Bottom Chamber
- C - Base Chamber / Sump
- D - Mesh / Fly Screen
- E - Tap

The Method

Take your bottom/base box which will be the Sump to collect the liquid feed and drill a hole, in the side towards the bottom, to fit the shaft of the tap. Screw the tap into place, not forgetting to place a washer, between the the box and the nut, (on the inside). This will help stop any leaks or seepage around the tap. Make sure it is tight and then place the box on its stand and make sure there is enough room for your bucket.

Check that the next box fits snugly on top and the whole thing is stable. The sump container has a solid floor to catch liquid run-off that drains down from upper chambers. Do not get carried away with your drilling! This is the only box that does not need holes in its very bottom, it is there to store the liquid.

Using a 15mm-20mm drill bit, drill holes in the bases of all the other boxes you are going to use. If you want to do this neatly because you are going to sell the Wormery, you will need to make and use a template or you could try drilling the boxes in one go while stacked. These holes are

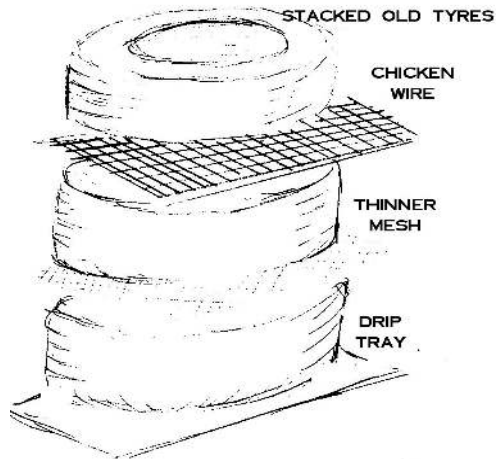
to allow the worms to move up into the boxes above, when they have finished eating all the kitchen waste in their present container. It also allows the liquid to drain down into the bottom sump container.

Some experts also recommend putting a layer of old fly screen or shade cloth above the sump and the next container above it, to prevent the worms dropping through the drainage holes into the liquid feed below and drowning. On the whole this is not a problem as the worms tend to go ever upward looking for new things to eat.

Using this basic design you can make your Wormery as functional or as fancy as you want. You can use lots of different materials to make a stacked Wormery, from simply using plastic containers, to recycling and stacking up old tyres with grids fitted.

Old Tyres

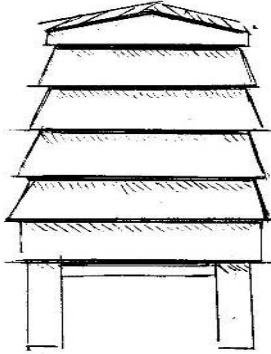
Here the tyres can be propped up slightly at one edge and the base slightly tilted to allow the liquid to run off or be collected



Another useful find, are those polystyrene cartons that are thrown away around markets, that were used to transport fish or vegetables. They have the added benefit of acting as insulation. They often come with their own lids, but although you only need one, do not throw the other lids away, they make excellent seed trays.

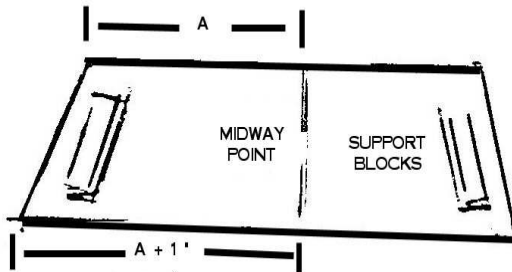
If you have the skills to construct a wooden Wormery, you can use a wire mesh for the bottom of your boxes. Although plastic tubs are commonly used, worms seem to prefer wood. One advantage of wood is that it breathes. As moisture moves through the wood, air is drawn into the bedding but make sure the wood has not been pre-treated with pesticide.

Bee Hive Style Wormery

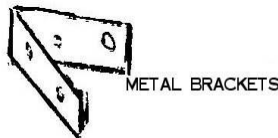


Although plastic containers are the most durable, the most appealing and often expensive ones are those made of wood that contain plastic trays. Here is a design for a stylish Bee-Hive Wormery.

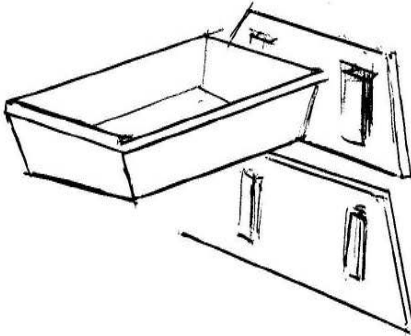
The size of the panels will depend on the size of the plastic tray you use.



To get the right slope on the edges of the sides find the mid point of the side

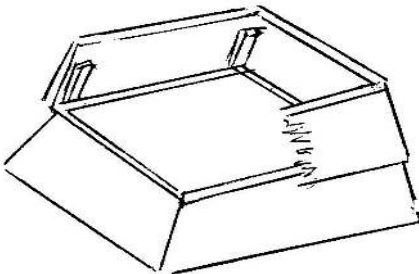


panel. The bottom, should be an inch longer than the top edge. That means the whole of the bottom edge is 2 inches longer than the top edge . Do this to all four sides.

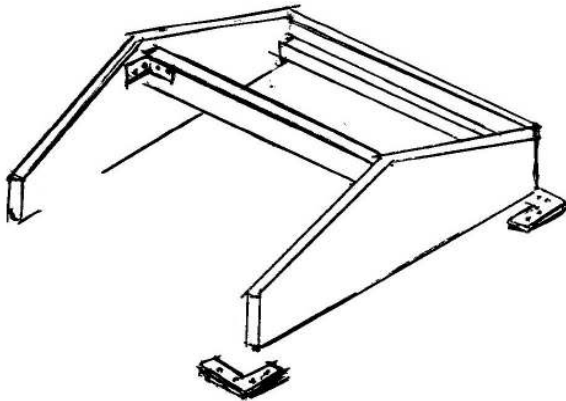


2 Thin supports are added to the inside of the side panels.

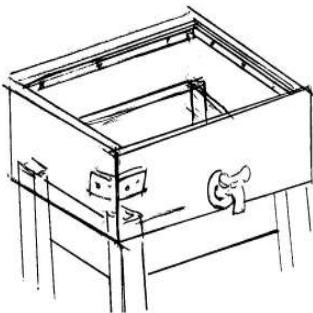
The top of these support the top edge of the plastic tray and the bottom of them will rest on the top of the wooden side edges of the chamber below.



To make the roof it is best to strengthen it with metal brackets. Put a batten along the inside bottom edge so that the roof fits snugly on the chamber below



You can roof it with flat pieces of wood, but they look better if you use fencing lathes, the slightly angled ones to produce an imitation rustic tiled roof.



The bottom chamber or sump must have sturdy legs and can be strengthened by adding "sides", inside the legs. You can use battens fixed just inside the top edge to support the plastic container. As an extra precaution you can always stretch a screen or

mesh across the top of the sump to prevent worms falling in but it is not usually necessary.

Another way to design the Beehive Wormery, is to use a few bottom sections of cladding to hold the base sump chamber, (instead of legs), but you must make sure that the chamber itself is high enough off the ground that it can be drained.



If this all sounds to complicated you can purchase one similar here: <http://www.thewormhive.co.uk/Worm%20Hive.htm>

(This will also give you an idea of how to price your wormery)

Starting Off the Wormery

If you want to work out the ratio of water to dry bedding that you will need scientifically you can use the following method.

By weight, mix three times as much water to equal quantity in weight of dry bedding. For example a pint of water weighs 1lb, so a gallon of water weighs 8lb. If you intend using 8lbs of dry bedding, you will have to add 24lbs or 3 gallons of water.

Add some soil and crushed eggshells if you have them. Then put it in the chamber and fluff it up to let the air in. Gentle sprinkle the worms over the bedding and separate any that have clump together in knots. After a few days, they should settle down in their new home.

If this seems too complicated there is another method. Fill the lower chamber, the first one above the base/sump chamber with shredded paper or cardboard. Fill it to overflowing and then hose down with water and refill to over

flowing again. Do not use glossy paper or newspaper that may contain a lot of ink. Now you are ready to add a layer of kitchen waste,(not to much to start with and cover it with a layer of compost or soil.

Next add your worms and spread them out gently on the surface and you will find they soon burrow down.

The worms will breed if food and space (i.e. more layers/containers) are plentiful and stop breeding when they are not.

Care and maintenance

Now that you have the basic idea of how a Wormery is designed and works we will look at the basic care and maintenance. You will soon find that the Wormery is very simple and easy to look after, as long as you understand how the worm lives and works. As we have already seen worms do not like strong light so make sure they always have a cover to protect them from direct light.

Now, worms breathe through their skins and need a certain amount of moisture to breathe, so they need damp surroundings. The trouble is that if it gets too wet they can drown. This is why you must make sure there is good drainage not just for the worm's sake but because you want to collect that valuable liquid feed!

If the Wormery becomes too soggy your first hint will be the smell! There should never be any unpleasant smells associated with your Wormery, It should normally have that pleasant garden smell of freshly turned earth.

Any bad smells are a sign that you have put in more food than the worms can eat at the moment and are not breeding fast enough to cope. It is this extra food that is rotting and producing the unpleasant smells.

If you have excess kitchen waste left over in the beginning, you can put it in a separate container and allow this to age for a while, or even put in the freezer. Freezing will actually speed up decomposition of the kitchen waste by breaking down the cell walls.

Remember to allow the mixture to reach room temperature before feeding to the worms, unless it is the middle of a heat wave and the bedding happens to need cooling . If you find that you still have to much waste for your Wormery, you can always build another Wormery or use a normal compost bin for the excess for a while. Over time the worms will breed to cope with quantity you give them.

Meanwhile you will need to stir things up in the Wormery! If there is to much food in the worms environment it will have become what worm experts call "Anaerobic". This simply means that there has been a sudden increase in the sort of bacteria that does not need oxygen to survive and because of this everything is a little out of balance. To rectify this all you need to do is get more air in the mix by literally stirring things up. Although worms have never been found to carry any illnesses themselves, when dealing with waste food it is also best to wear gloves and wash your hands afterwards. Give it all a gentle turning over and get some air back into the mix. If it still looks a bit soggy add some damp cardboard or paper to balance things up. Do not add any fresh food to the mix until things sort themselves out

Position & surroundings.

Happy and comfortable worms will keep composting all the year round. The colder it gets, the slower they work and if the temperature falls below 10 degrees centigrade (50F) they will stop. So, if you live in a part of the world that has really cold Winter's, you will have to think about moving our Wormery into a shed or garage for those cold month's where the wormery is not exposed to freezing winter winds.

Do not forget a properly maintained Wormery does not smell. Remember you will need easy access from the kitchen as well. Even better, if you have a "solar heated" greenhouse that you use to grow your food all the year round, what better place to have your fertiliser and plant food liquid close at hand. If despite your best efforts, they do get cold and become inactive, just stop feeding them and wait until the weather warms up before continuing their feeding.

If circumstances dictate that you have no choice but to keep them outside, for whatever reason in the cold weather, then you can help them by wrapping old carpet or some form of insulation around the boxes. You could even use some straw, inside and out. Cover the whole Wormery with an old blanket or sacking to help to keep warmth inside. Remember to leave the tap open and a large container beneath it to catch it. This is so that if the liquid does not rise up into the Wormery and suffocate the worms.

The other side of the coin to worry about is if the weather gets too hot. Do not let the worms get hotter than 23 degrees centigrade (73F) or they will just stop and probably die. So always keep your Wormery out of direct sunlight, just to be on the safe side. Try and make sure it is not exposed to full sun from 10 - 4 in the Summer months. Try and find a wall facing away from the sun and remember to watch that it does not dry out. The worms need that moisture to breathe.

Otherwise just make sure that it is where it cannot be knocked over and is out of the wind and everything should be fine!

Going on Holiday

Unlike a Cat, Dog or other family pet, you will not have to make special arrangements if you have to go away and leave them for a while, say to go on holiday. The worms can happily survive for a few weeks without feeding. Just make sure you add plenty of damp shredded paper and cardboard to the mix before you leave.

If the worms do run low on food while you are away they will stop breeding, but do not worry, a good feed on your return will start them off again.

What to feed them

This sort of composting with a Wormery is often referred to as "cold" composting rather than the "hot" composting that takes place in your compost bin. Although the Wormery is an ideal way of recycling all the fruit and

vegetable scraps from your kitchen, as you would expect, like every living creature worms have their likes and dislikes.

You can feed your worms on an assortment of vegetable and fruit scraps, tea bags and coffee grounds, soft leaves, hair, vacuum cleaner dust and damp cardboard, egg shells (but not egg), some bread, soaked paper and cardboard, pizza boxes, egg cartons, cooked potato. (pulp from the juicer that isn't too acidic), and Pet Faeces

Worms do not like acidic foods such as citrus peels or onions! They also do not like Spicy Foods or very oily foods. So avoid feeding them Chilli, Curry, Salt, Garlic, Onions, Fatty foods, whole raw Potatoes, Meat, Fish, Fat and Bones or Dairy products like Milk, Yoghurt, Butter, Cheese & Eggs.

No more than a couple of handfuls of cut grass at a time. Also be careful not to feed them any Poisonous Plants or weeds, Insecticides or Pesticides. No Chicken Manure (It is too High In Ammonia). Also avoid materials contaminated

with chemicals. This includes Dog and Cat Poo if they are taking medicine, especially for "worms".

Most earthworm appreciate calcium in their diet. You can help them by drying your eggshells and then running over them with a rolling pin. Sprinkle the crushed shells on the worm food every time you feed the worms

You will find that the worms will eat the kitchen waste a lot faster if you take the time to prepare it by cutting it into small pieces. If you really want to spoil them, blend their food scraps with water before feeding it to worms. Some people even "cook" their scraps in a microwave, but remember to let them get cold before you feed them to your worms.

Be careful not to over-feed your worms - especially in the beginning. Best to give them regular small amounts to start with, but only feed them again when most of those previous food scraps have been eaten.

Maintenance routine

If you can get the maintenance of the the Wormery into a weekly routine it should only take 10 minutes of your time.

Every week

- Check that the bottom chamber is emptied of liquid fertilizer which is stored or used.
- Check the moisture content of the Wormery. If the contents are to dry, then just pour some water over the food. If you can, use rainwater, especially if your tap water is chlorinated. Sprinkle the water evenly over its entire length. This will keep the worms moist and help keep their bedding clean
- If you are using more than one chamber in a stack, make sure that that the material still reaches the base of the of the container stacked on top. So the worms can travel up.
- Add more food to the top box.

You do not have to feed the worms daily - you can do it as and when food becomes available. Once to three times a week is about normal. You can store extra food in a bucket by the Wormery, it does not matter

if it starts to rot as long as it does not get soggy. Then spend about 3 minutes every few days putting the waste into the Wormery

What sort of worm

There are basically two types of garden worms. There are the adventurous ones that live near the surface in the topsoil and leaves, then there are the deep dwellers that prefer the dark and deep depths that occasionally turn up when you are double digging. These usually only come to the surface to escape the rain water that forces them up nearer the surface to breathe.

The worms that you find while digging down in your garden are not suitable for your Wormery. You will need those sort of worms that thrive in moist rich conditions provided by compost and animal manure or rotting pea straw. The most common compost worms have wonderful names like Tiger Worms, Red Wigglers and Indian Blues.

So, you will probably have to buy your worms from a supplier but the good news is once you have some you will not have to buy anymore! You can feed them and breed them. That is as long as you keep your worms happy. If you are ordering your worms from somewhere please make sure that the Wormery is complete and they have a home ready for their arrival.

The worms themselves can eat up to half their own weight of waste each day and can live up to 2 - 3 years. The worms will produce eggs in the form of small cocoons that look like tiny lemons. These darken in colour as the worm grows in the cocoon and gets ready to hatch. From cocoon to hatching usually takes around 3 weeks. These Worms will mature in about 3 - 6 weeks after hatching and will breed every 3-4 days throughout the spring till the autumn.

There are two main popular types of composting worms.

- 1) **Dendrobaena (Eisenia Hortensis) also called the European Nightcrawler**

The largest of the composting worms, this is identified by

the reddish brown stripes all over its body and the yellow creamy coloured tip to its tail. Dendras love damp conditions and will tolerate acid soils more than other worms.

2) Red Tiger Worm (*Eisenia Andrei* / *Fetida*) or the Brandling Worm / Manure Worm.

Smaller than the Dendra above, it has Red stripes and is usually found in manure around stables and in compost heaps

The scale of production

The worms of a small Wormery, when it is up and running smoothly, can easily handle the average amount of food scraps generated by a family of four.

If you are thinking of building one for a school. 300 students would need a Wormery that could house about 23,000 to 46,000 worms. To give you a rough idea the base of the Wormery would have to be about 2 metres sq.

If you are wondering how much waste the worms will eat, well when healthy and happy, they can dispose of just under half their own body weight in a day. That means that if you start your Wormery with 1kg of worms they will soon be eating their way through 500g of your food waste every day and converting it into valuable fertilizers and soil improvers.

This gets better because a happy healthy and well fed worm will also begin thinking of starting a family. Your Wormery can also double the size of its worm population every 60-90 days. Then of course you can double the amount of waste you feed them. At the end of the day you will learn how much to give them, as it will also vary on the time of year.

Some of the most Common Problems

It all looks to wet!

Make sure you have drained off the liquid feed from the bottom sump chamber! Next, check that the chambers are tightly fitting and the cover is not letting in the rain. Add Paper and cardboard to the mix and gently stir it all up.

It all looks to dry!

Just lightly and evenly damp it all down with some water preferably rainwater, especially if your tap water is chlorinated. Make sure it is not in direct sunlight at some part of the day.

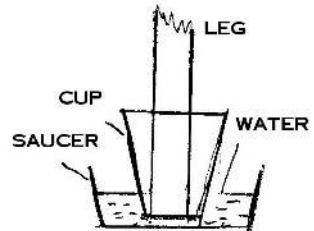
I have insects in the Wormery!

You have made such a good home for your worms, it is not surprising that some of their neighbours will be jealous!

In general other insects, like ants will not hurt the worms. You can help keep out unwelcome house guests by making sure that the lid is tight fitting or keep a Hessian or underfelt cover over the food scraps to discourage them.

As long as the queen doesn't move in, ants in the wormery does not generally pose a problem, but it is a good indication that the Wormery is too dry. The ants are there to feast on the fungi, seeds, and other small insects. Dampen the compost, and the ants soon move out.

If your Wormery has legs, you can place the base of each leg in an old plastic cup and place that in a old bowl or plant pot base full of water to make a moat around the base of each leg. This will prevent other insects trying to climb up. Another method is to smear Vaseline (petroleum jelly) around the base of the leg.



Remember, One thing to look out for is that other insects usually move in when the Wormery is out of balance, becoming too dry or acidic.

HELP! My Worms Are Escaping!

Sometimes worms need a little time to get used to their new home. You can help them adjust more quickly to their new surroundings by putting some garden soil in with the initial bedding. The soil will contain lots of life in the form of microbes and bacteria that will help your worms to feel at home.

You can also put the Wormery in a bin liner overnight and seal the top. Any worms that get out, will be trapped in the liner, and can be tipped straight back into the Wormery Do not leave it on during the day as the worms need air!

If your Wormery is standing on a hard surface, you can put a damp piece of cardboard on the floor under the

Wormery Any worms that do escape will hide underneath it and be recaptured when you lift the cardboard.

All my worms are climbing onto the inside of the roof cover!

This could be caused by a number of things. You may have put something in their food they do not like. Check the feeding list. The other possibility is that some food is composting and getting to hot. More than likely though it is going to rain. Worms are amazingly sensitive to changes in the temperature and air pressure. Their instinct is to climb when it is going to rain so they do not drown. Make sure the rainwater does not get in and soak the Wormery!

Black Gold - What to use it for

There is reason why gardeners refer to Worm casts as "Black Gold". It can be used in the garden, the greenhouse and also for House plants. The Wormery compost can be used when planting out new plants in the garden, added to containers, used as a top dressing (mulch) or it can be used as an ingredient when making up your own potting compost.

When used with potting compost in planting up seeds or seedlings it has been reported to speed up germination and help the plants become established more quickly. Because this is a natural feed the plants absorb it more readily and this has also resulted in bigger blooms. Other gardeners have reported an increase in yields of their vegetables by up to a third!

If you look how worms function in the garden, you will quickly understand the best way to use this "Black Gold".

Most worms spend their life tunneling and feeding in the first nine inches of soil, which unsurprisingly is called the "top-soil" and it is roughly the depth of one spade. Even though the world is a very big place and it is a long way to the centre of the earth, most of the plants, fruits and crops that feed us, our animals and livestock, live in and depend on just this nine inches of soil.

Worms through their tunnels allow the air to circulate around the plant roots. This "aeration" encourages the decay of dead material in the soil and the release of nitrates and other plant food. Their tunnels also allow the excess water drain away, preventing the roots from getting waterlogged. Gilbert White, the famous naturalist of Selborne, said way back in 1777, "Men would find that the earth without worms would soon become cold, hardbound and void of fermentation and consequently would soon become sterile".

You may have seen worm casts lying on a lawn. This is because the soil has been digested by the worm at the lower levels and deposited on or just near the surface. The natural action of rain washes minerals down into these

lower reaches of the soil, but worms bring the mineral rich soil up again and make its contents available to the plants.

Perhaps this is not so noticeable in a well dug garden where the soil is constantly being turned over by hand. If you look just below the surface of a meadow or old lawn you will find the soil near the surface almost stone free. This is because a worm cannot swallow anything larger than 2mm in diameter, so only the finest soil travels with them to the surface. The stones sink as the finer material is mined from underneath them.

So here you have the greatest secret, the most effective way to use your "Black Gold", is as a mulch or top dressing. Simply spread a thin layer around the base of your vegetables and plants and let nature take its course, there is no need to do the back breaking work of "digging in". As you water your plants or the rains come, the nutrients will steadily work their way down to the plants roots. This will boost the work already been done by the worms in your soil.

How do I make some extra money?

Well, first of all you need to be original in your thinking. Do not rely entirely just on the ideas that are mentioned here. That does not mean that you have to think up "original" ideas, only that you put your own spin on them, your own touch, perhaps combine the ideas presented here with something you already know. What I am really trying to say is "make them your own"

Secondly, do not just talk about it, do it. Make sure you act when you have the opportunity and more importantly you have the product to sell when you have the customer. It is no good having customers, if you have not got products.

Lastly and this is the most important. Do not start in debt and try to work your way out. This means do not use your credit card to the full or take out a large loan to start your venture. If you do your sums and have not got

enough money then just start smaller, test the markets and when you are quite, quite sure you have a successful idea on your hands then think about further investment.

After you have mastered the basic skills and have your own Wormery up and running you can start by building wormeries for your family, friends and work colleagues. You will be surprised how quickly the word will spread. Do not forget that apart from building and selling the Wormeries to them, you can also breed and sell them the worms they need. If you are already doing a bit of weekly gardening for someone, why not sell them the idea of their own Wormery.

You have seen how easy it is to look after them once you have set up a routine. You could build and start off a Wormery for them and then deliver it. If they have children, you can teach them how to care for it. Kids love it and the worms often become like family pets!. If not, just get them to leave their kitchen scraps in a bucket by the Wormery and you can feed the worms for them when you do your weekly check.

Apart from using the information in this manual to build and design your own wormeries, I have also included in the appendix at the end of this book more than enough extra information to structure a small talk. Schools are just one place that love "Experts" to come in and talk to their kids. And guess what? Kids love worms!

Easy Demonstration

This is a wonderfully simple demonstration that you can use to show at schools and other places.

You will need :

An empty 2 litre plastic lemonade bottle

A Plant pot filled with damp soil

Some Crushed Chalk, School Blackboard chalk is ideal!

Some Black Paper or Foil

Some Damp Sand

Some Dead leaves

A Marker Pen

- **Make a tall clear cylinder by carefully cutting the top and bottom off the empty lemonade bottle**
- **Next put about ten earthworms in the damp soil of the plant pot**

- Stand your cylinder onto of the soil in the plant pot and gently fill it with alternate layers of damp sand, thin layers of crushed chalk and damp soil.
- Using the marker pen, mark the layers on the side of the cylinder.
- Place the crushed dead leaves on the top
- Wrap the outside of the cylinder with the black paper or foil to make the worms think they are underground!

Keep everything damp but not wet and leave it for a few days. Then remove the cover and see what the worms have been up to.

This is a great experiment for demonstrating how active the worms are. If this is done for a school they could repeat the experiment with different "foods" to learn which one the worms like best. You can show people how to make one and then produce one you did earlier.

Why stop there, I am sure there are lots of places in your local community, including churches, Gardening clubs, societies and businesses that would pay for an interesting talk. Remember, they are all potential customers so make

sure you take plenty of information leaflets with your contact details.

If these places have kitchens or canteens with food waste, why not experiment by building them a large Wormery. Many businesses, both large and small are eager to increase their "Green Credentials" in the eyes of their customers.

Just think of the potential of selling wormeries and having a service contract with companies that can claim back the expense against their taxes. Also, there is the possibility that they will not have a use for the compost and feed that you could keep.

If you feel you are not confident enough to give a talk, then find someone to give it for you and promote you as a local expert. Similarly, if you don't have wood working skills, then you could always sub-contract out.

There are always carpenters looking for small jobs to fill the gaps in their week.

Make sure though that they understand exactly what you want but to avoid the danger of them setting up in competition you could have them construct the shells for you to add the details, trays, taps, etc.

Do not sell to cheap, although commercially produced plastic Wormeries are still fairly expensive themselves/ there will always be room for high crafted wooden designs with a nice finish. The Bee Hive design is still extremely popular.

A Goldmine Niche

One almost completely untapped market is Pet owners. Target people with large and rare dogs, they usually have lots of money. Serious pet owners that present their animals at shows like to think of themselves as responsible owners. They, or their walkers often "pick up" after their pet has used the street or flower bed as a toilet. But how do they dispose of it?

Do you realise how many responsible pet owners, act responsibly and then just bin it in a plastic bag? Now, apart from the fact someone has to pay someone to collect and dump it somewhere, do you know how long it will take that plastic bag to break down? Here is another problem for someone in the future, some plastic bags will take 100 hundred years to break down! Can you imagine what sort of germs are breeding at that dump site? Eeewww!

Back before there was tarmac and concrete an army of bugs and insect would break it down. You can show them how to be really responsible and use a Wormery to recreate that process. Even after the food has been "processed" by the pet, there are still enough nutrients to make a worm's dinner.

A word of **warning**, though and that is you get out, what you put in. Healthy pets produce healthy compost. Cats and Dogs can carry some nasty diseases and if they are sick, their waste should not be composted but incinerated, (rather than dumped for someone else to sort out the problem).

You could actually sell pet owners on having two wormeries! Let them use one for their pet waste and one for their kitchen waste. That way they can be selective about where they use the finished compost. Although it really is alright, some people are still a bit squeamish about using their pet compost for their vegetables and herbs!

Do not forget, you can also get and supply them with useful biodegradable paper bags to use when they collect their pet's waste, the worms will eat the whole lot, bag and all.

WARNING: IF THE PET IS TAKING MEDICINE, ESPECIALLY FOR "WORMING", THEIR WASTE MAY KILL THE WORMS IN THE WORMERY

I have given you some ideas that you can use to build a good business from scratch, and run from your home and garden. Just be aware that you will not become an instant millionaire from these ideas. Several of home and garden ideas clumped together could bring in a decent living, and many people are doing just that!

Many of these ideas I have told you, will fit in quite nicely with a part-time Internet business.

So finally, a great way to earn some extra income is to join my affiliate scheme and help sell my books. You will receive half the money I am paid by anyone you refer.

For me it is not just about the money. I am eager to spread the word and get this information out there to as many people as possible and I could really use your help. That is why I am willing to split any sales you make 50%/50%.

If you click on my link below, you will find information about getting started as an affiliate.

You can find out more details here.

<http://www.youshouldreadmore.com/ebooks/affiliate.html>

More than that, you will find information there enabling you to learn skills that you can use to earn commission on any of the products that are sold on-line offering affiliate commission. That right, I do not expect you to just sell my books.



<http://www.youshouldreadmore.com>

Here I will be building up a resource by publishing more articles and information that you can use to promote this book and that you can use in your sales literature to market your own Wormery business.

I would like to take this opportunity to wish you all the best and I hope we will do business together in the future. In the meantime, as promised here is a collection of worm information and trivia that I hope you will find useful.

Best wishes

Gareth Hogan

The Anatomy of Worm

Earthworms are invertebrates, which is a scientific way of saying they are boneless, they have no bones. The worm's body is made up of muscular segments or rings and each one has 4 pairs of fine hairs or bristles that help the worm move. They are not easy to see but did you know you can use these bristles to tell which end is the head by running your finger down its underside? If it feels smooth all the way, you are running your finger from head to tail. If you can feel a roughness, you are moving towards the

head. I have never really found a practical use for this but you never know! This is why a worm does not move properly on a smooth surface, where it cannot get a grip.

As a worm matures and is able to lay eggs, (which takes just over 2 months), a light coloured band or saddle appears towards the head end. Contrary to popular folk belief, this is not a scar or where the worm has been cut in two and grown a new head! This is called the "Clitellum" and is used to produce the cocoon that surrounds the eggs. This is one way of telling if a worm is ready to breed. The eggs are very small, even smaller than a grain of rice. Yellow in colour, the cocoon itself is often said to resemble little lemons, each cocoon can harbour up to 5 worms. The cocoon will darken as the worms get ready to hatch.

At the head end there is a little flap called the "Prostomium" and is a bit like a top lip. The worm uses it to stop things going in it's mouth, which is directly underneath it. Although worms do not have teeth, the mouth is strong enough to grab a leaf and drag it around!

Even though worms do not have eyes they are very, very sensitive to light and will try to crawl away from any light source. They have special organs in their skins that allow

them to sense vibrations and they can "feel" light on their skin. They also have a highly developed sense of warmth and cold. If a worm does not like its surroundings it will do everything in its power to leave.

They can move away because their whole body is surrounded by muscle from tip to tail. They move by squeezing their circular muscles tight and becoming thinner and longer. This enables their front end to move forward and then they move their rear end towards the front. If you hold a worm in a lightly closed fist, you will feel how strong it is, as it tries to push between your fingers.

The worms appear pink or red because their blood is close to the surface. The worms breathe by taking oxygen through their skin straight into their circulatory blood system. They need their skin moist to absorb air but if it is too wet they can drown.

Some worms go into a form of suspended animation in the summer months. Burrowing down into the ground they curl

up. Even if you dig them up you will have trouble trying to wake them up!

Questions About Worms

How do worms eat?

Worms rely on other organisms to soften the food through decomposition before eating it. They then take small particles into their mouth and swallow them along with bits of earth, sand and limestone. The action of their muscles squeezing and relaxing, grind all this together and allows them to digest it.

Does a worm turn into two worms if it is cut in two?

Yes, two dead worms! This is an old myth. If a worm is cut near the tail end, sometimes a new tail will grow. If you cut off the head end, it dies.

Can A Wormery Compost Organic Nappies

Yes It Can but...

A baby can use around 8-10 nappies a day so a small Wormery could never cope with the amount of waste produced, of course you could build a huge Wormery or even lots of small ones. Probably a compost bin would be far better suited to the job!

Strange and Useful facts about worms to amuse and amaze!

The largest earthworm ever found so far, was in South Africa and measured 22 feet from its nose to the tip of its tail.

In the world as a whole there are about 3,000 species of earthworm. Of these just 28 are found in the UK. The largest British species grows up to 35cm, but the largest tropical species reach over 1m!

The Australian Gippsland Earthworm grows to 12 feet long and can weigh one and one half pounds (1.5 lbs).

The name worm comes from the old English word "Wyrn", which was used to describe any long thin animal that wriggled - it was even used in the old sagas and stories for snakes and dragons!

Charles Darwin of "Origins of the Species" fame, was one of the first scientists to study worms seriously and spent 39 years of his life studying earthworms. He soon realised how important they are in maintaining the fertility of our soils. He was so impressed by them that he nicknamed them "Nature's Plough".

He went on to express his belief that no other animal has played so important a part in the history of the world, "as have these lowly organised creatures". His observations

showed that an acre of ground could produce up to 18 tonnes of worm-casts each year and that such an acre could comfortably support at least 53,000 worms.

Worms are forced to the surface on rainy nights to avoid drowning. There they are enjoyed as a delicacy by many other animals. Foxes and badgers eat large quantities of worms if they can find them. A badger will quite willingly feast on worms all night long, sucking them up like spaghetti!

Other creatures that enjoy worm snacks include moles, shrews, hedgehogs and a variety of birds including blackbirds, thrushes and robins. Very small worms are even taken by ground beetles, centipedes, frogs and toads.

BUT... Most of these creatures are also the gardeners friends because they also eat slugs as well!

WHY USE WORMS

Latest research suggest that the average household throws away just over a third of the food that they pay for and at least half of this is edible, while the rest comprises of peelings and bones.

That means at least a third of the money you spend on food every week is just going out in the bin. On top of this, you are also paying someone through local or central taxes to take it away and dispose of it for you.

In fact, food accounts for nearly 20% of all domestic waste that is collected and taken to Land fill sites, which are not only quickly getting full but already responsible for causing huge amounts of the dangerous Greenhouse Gas, Methane that is polluting our atmosphere.

If you are a gardener growing flowers or even your own food, I am sorry to say, you are probably wasting more of your hard earned money on buying in soil improvers and fertiliser.

I say wasting, because keeping your own colony of worms is an excellent way of turning your kitchen scraps, (that you have paid for, and will otherwise pay someone to take away), into one of richest, high quality composts, nicknamed by professional gardener's as "black gold". This can be used in potting up, propagation of new plants, added to house plant pots or even used as a mulch (top dressing) to feed your veg and fruit plants.

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