

Composting With Worms

There is little in common between 'normal' or 'heat' type composting and 'vermic-composting'. My purpose with this section is to introduce readers to the basics of the worm related forms of composting while touching only lightly, if at all, on the 'normal' kind. That said, forward into the fog!

Unlike the 'normal' type of composting which is done outdoors and which comes to a screeching halt in the fall and winter months and which can take long periods to produce usable quantities of truly finished compost, vermic-composting (vermicomposting) can yield, completed, higher quality compost in a matter of only a few months or even weeks and be done year round!

Let's divide the process into bite size chunks by pointing out that one can use the worms in composting both indoors and outdoors. Both methods have limitations, advantages, different in and out-puts, and so require separate attention. I don't have the storage space to go into excessive depth on this but will try to get enough information here to make at least a raw primer on the subjects.

Worm composting is not, as I have said, like normal composting. The materials being composted are simply consumed by the worms and excreted as casts or 'castings'. This process binds the nutrients consumed into a plant-usable form, reducing the volume of the original materials and adding good soil building micro and macrobiotics to the mix. The worm casts are covered by the worms with a slow dissolving, semi-permeable mucus which is both a time release mechanism for the cast's nutritional value, and the cause of the finished compost's extraordinary water retention capabilities. What is fed into the worms then, is converted into a mild, top soil or humus-like pseudo-fertilizer which will not "burn" plants, cause oxygen starvation or other unwanted problems when mixed with the soil of your garden or placed as a mulch layer on potted plants etc.

Excessive heat and multiple pile turning are not needed or wanted to accomplish making the best soil builder you will ever have or use. In fact, high heat will kill the worms which are accelerating the composting process for you.

Some folks, with lots of room in their yards, like to simply make a heap which would, for normal composting, be placed in a sunny location with materials added as they become available. Others prefer to use some form of containment, building an enclosing, air permeable structure, covering it, and even building a floor. Doing the enclosure thing seems to speed the process for me and is neater. For worm composting however, the heaped or enclosed materials should not be placed in other than shaded, cool, moist locations and must not be allowed to become heated by the microbial action which takes place in normal composting. If it does get hot, it may cause the loss of your worms if they do not have cooler areas to escape into.

Manure worms, in their feral state, can be found in and under naturally rich food sources such as manure piles, rotting vegetation etc. They like the damp, cool, rotting stuff above,

not in the ground. So, drop a pound of the little critters per half yard of compost into your compost pile, keep the pile damp, cool and aeriated, add extra stuff as it becomes available and POW! You'll be getting fast, super rich compost in short order!

Like the heat type of composting, there's a lot more to it and some better ways of doing vermicomposting than just throwing worms into your compost pile. Check out the BOOKS section of the site and get the full lowdown on vermicomposting from the top experts in the field.

Now for phase two... indoor vermicomposting. What is done in a heap outside, requiring yards of 'green waste' and lots of worms, can be done indoors with only a pound or two of worms, some bedding material, and your garbage scraps! There is something deeply satisfying about recycling coffee grounds, eggshells, newspapers, leftovers, and other such stuff, turning it into usable (even desirable!) plant food!

Basically, a box is filled with bedding materials and the worms are added to the bedding. Food scraps are placed on top or a few inches under the bedding where the worms find and devour them. Eventually, the worms eat their bedding as well and then it is time to remove the finished plant ready castings, replace the bedding with fresh stuff and put the worms back into the box. The casts are fed to your plants, given to neighbors, and friends (who will, having tried 'em, want more than you are willing or able to supply), or if you don't have any friends or plants, the casts can be tossed onto the lawn or garden. That brings all those leftovers full circle in the ecosystem and saves many a garbage bag and trip to the curb.

There are separate areas in this and other sections of the site on boxes, bedding, feeding and most of the other things you need to know about to get started.

Both indoor and outdoor vermicomposting are simple, easy to set up and maintain, sound ecological practices which require little time or bother to keep up with. My wife and I do both kinds so I speak from experience when I say, "The worms are; no muss, no fuss, no bother! Lots of fun too... and an educational tool providing great enjoyment for our grandkids!"

Growing Worms

Each species of earthworm has different requirements, habits, and needs. People who raise worms must be aware of these idiosyncrasies taking advantage of the worms nature where possible and staying one step ahead of them when their more feral traits, are less compatible with cultivation.

Those who try and fail, (whether with home vermicomposting or commercial) to keep a healthy worm population, probably have not done their homework or perhaps they have trouble with the concept of "enclosed ecosystems". The cure for the first of these

problems is to get some books on the subject, read them, and apply the gleaned knowledge. The second is a tad more complex as it requires a rudimentary understanding of 'ecology' and the life sustaining interaction between the various plants, animals, and inorganics.

When one domesticates an animal, which worms are, the welfare of that animal becomes the moral, (if not financial), responsibility of the perpetrator. To properly care for any such animal, particularly those with feral habits, one must provide conditions which will be conducive to the animals well being. To be able to provide such an environment, in a restricted area with highly concentrated populations, (abnormal but useful) without detrimental impact on the animals, requires extensive knowledge of the animal being raised. This knowledge allows one to stay a step ahead of potential problems, or to avoid those problems entirely by producing and maintaining, for the animal, an environment with which it is compatible. The handler/user is the one who put the worms in the box, bin, or pit...so that person is responsible for their welfare. Fortunately, it isn't really all that complicated...

In other words ya gotta be smarter than the worms to successfully raise them. I think it is safe to say that just about anyone willing to invest the time in learning about the worm variety they intend to raise and putting forth reasonable effort and dilligence in their care, should find that their worm populations will do very well indeed! It really isn't that big a deal.

What To Keep Them In

What do you want them to do for you? Which kind of worm is compatible with your desires/goals? Is there existing technology compatible with these goals? Can you effeciently get the knowledge base to adequately maintain and complete the process? What happens to your worms when the project is complete? Who will maintain the worms while the project is underway?

Don't know? We have an excellent book section....and of course, the "Original VermiComposter®. :-)

Should your purpose be to have your home food waste radically reduced, then a box is what you need. The box needs to be sized to accommodate a sufficient poundage of worms to allow them to consume the food waste you put in the box each day. *E. foetida* is an excellent choice for this purpose as this worm loves to be right in the middle of high food concentrations and is, if there is suffecient food, water, air, an acceptable bedding material and proper temperatures, happy as a little pet pig in a box type environment.

You can make your own box or bin for the worms. Wooden construction is often recommended by the 'ole timers because the wood 'breathes', is fairly cheap, and eventually will return to the earth (recyclable). While most folks don't have a plastics

factory or a sheetmetal forming shop, most do have a few of the common wood working tools. A hammer, saw, measuring device, and a square, are about all you need to construct a nice worm bin. Now, at this point, I would like to let you know that in my opinion, it is cheaper, safer, and simpler to just buy what you need in bins and such. The 'pro's' have spent countless hours getting the kinks worked out of them, and have taken into consideration many factors which you will probably learn the hard way if you make your own.

That said, if you must build your own, then here are a few points which will help you avoid problems down the line:

1) Drainage is a must. The box or bin must have adequate drainage to avoid the development of anaerobic conditions (nasty smells and dead worms). It is better to have too much drainage built in than to have too little. Household food waste is mostly water. If I had to venture a guess, it would be at least 80% water! You must make allowances for that liquid to be drained off from the bin. The liquid drainage from worm bins is great for plants so don't toss it or flush it. Instead, put it on the lawn or feed it to your house plants in a diluted form.

2) The size of the bin or box must be compatible with your ability to move it when it is filled with damp bedding, castings and worms. The bedding you put in for the worms will eventually be consumed by them, and they will need to be separated from the finished vermicompost/castings. New bedding will need to be placed in the container and the worms placed back in to continue their work. There are ways to do all that which do not involve lifting the box but, trust me on this one, you may want to move it occasionally anyway.

3) There must be sufficient surface area in the box (above the bedding), to allow the placement of the food waste in different locations with each feeding. Placing the food waste in different areas allows the munching worms to move away from areas which, for whatever reason, are not to their liking. Additionally, if they do not finish completely the scraps fed the day before, you will not be digging up old food waste and disturbing the workers.

4) Although proponents of the 'make your own box' senario seldom mention it, you will want to have a lid for the box. The lid should be tight fitting to keep out unwanted pests and to make moisture control more predictable. The use of damp burlap or old carpet scraps to cover the bedding surface is fine if your bin is out of doors. However, inside they do not provide adequate bug proofing.

5) Ventilation for the worm box can be accomplished by drilling lots of holes in both the bottom and top. To keep pests under control, the holes should have a fine screen over them. The ventilation holes can also help in moisture control through evaporation.

6) Depth enough for adequate amounts of bedding for the worms is a must. The 'right' amount of bedding depends on how many worms you are housing and how big the box is.

A box which is to be used indoors should have enough depth (and surface area), to allow you to bury the food waste below the surface of the bedding a few inches while still giving the worms plenty of room to move around in. Some folks council that one should not bury the food waste as it could become anaerobic and cause problems of acidity in the bedding. While it is true that if the worms are too few in number to finish the scraps they get each day, the scraps may do some rotting. It is also true that if they rot on top of the bedding, they draw pests and the odor of the decay could become a problem. The key to food placement is, don't over feed your worms. Let them finish their latest meal before giving them more and if you consistantly find that your worms are too slow in consuming the food waste, then it could be that you need more of the little critters to do the job. The worms *can* eat their weight in food waste each day but, half their weight is more likely. More worms may mean a bigger box and more bedding to get the job done. If you know your family's average food waste weight per week, then you know how many worms you will need. Keep in mind that they spend a certain amount of time munching their bedding... and that the smaller the pieces that go into the box, the quicker the worms will be able to eat them. One other thing on that, worms multiply rapidly and populations will expand to meet the available food and space. Once those limits are reached, the population in the box will stabilize.

8) Place the container in a cool location like on the floor of a broom closet, under your sink, or out in the garage. Don't allow it to get much below 50 degrees F. or to get heated above 90 degrees F.. The floor is much cooler than higher up in the room so higher for warmer and lower for cooler.

Plastic containers are just fine and work well as long as the above conditions are met. I use plastic bins for my 'house worms' and have had no problems. If you make your own from plastic tubs, ventilation and drainage are slightly more difficult to manage as the plastic does not breath but, it also does not rot or become waterlogged. Again, I really strongly suggest that it is better in the long run to buy a professionally designed one and so avoid a host of potential hard knocks.

We offer The complete line of Shields Publications and videos, and a book by Vermitech's CEO. They are inexpensive and chock full of the things the professionals think you need to know if you are going to get involved with worms at home, as a commercial grower, or just want to know more on the subject. Check out the "Book" section to see the selection. If you already are, or are considering becoming, a vermicomposter the book "Worms Eat My Garbage" (end of the list in the book section) is excellent.

What To Feed Your Worms

Green waste (compostable yard waste). Anything which once was alive but no longer is, can be fed to worms. There are installations which feed slaughter house refuse to worms, manures from rabbits, horses, cows, pigs, and processed sewage sludge. Worms will

happily eat your kitchen scraps, paper napkins, coffee, tea, (and their respective filters), crushed eggshells, melon rinds, peelings etc. Vegetable matter is best and if you have a food processor, the worms will bless you for grinding their supper before feeding it to them.

Some things to avoid are: household chemicals, detergents, oils, and fatty substances like dairy products and peanut butter. Human and pet feces should not be fed to the worms or even composted for that matter as they pose a health risk. Meat scraps are slow and stinky decomposers and often contain a lot of fat so don't use them either. If you cook with a lot of oils or fats or put oils and fatty dressings on your salads, don't feed those leftovers to your worms either. It should go without saying (but here it is anyway), that inorganics like tinfoil, glass, plastic etc., will not be eaten and should not be fed to your worms.

I have fed left over milk and morning cereal, bread of all descriptions, moldy unknowns gleaned from the depths of the refrigerator and a lot of other stuff that I probably shouldn't have fed them, with no adverse effects. Just remember, the fatty stuff can cause problems with odor and the oils can cause respiratory problems (like death), with your *skin breathing* worms.

Commercial growers feed manures, ground grains, alfalfa, sewage sludge, green waste, paper pulp and the like to their worms.

Astute landfill operators use worms to reduce organics of all descriptions in both volume and weight.

Composters feed the critters their yard and garden waste and whatever else they can throw into the heap that is of an acceptable organic origin.

All this munching is done mainly by worms like *E. foetida* or *R. rubellus* which are basically leaf layer, rich food source (above ground) kinds of worms. If you were to go to your garden, dig up some worms and try to put them to the same task, they would simply die.

Should you want to increase the number of garden type worms in your soil (good idea that!), then provide winter ground cover, extra food like rotted alfalfa in the spring and fall and, in the summer, mulch thickly with compost to protect them from hot dry conditions. The less you disturb the soil and the less depth to which you disturb it the better life will be for your worms and for your garden. Implanting worms in areas which don't have them works like a champ if you spread them in good numbers over the area and then take care of them as per above.

Worm Bedding

Indoor vermicomposting and commercial growing are the places where worm bedding becomes an issue. The 'rich food source' types of worms are not the only ones that are raised commercially (in bedding), but for the indoor vermicomposter, *E. foetida* and *R. rubellus* are almost certainly the worm varieties of choice so I will talk about the beddings which are good for them.

Worm bedding must have certain attributes, which, combined with a steady and adequate food supply and the other prime conditions of life in the worm box, will result in happy healthy worm populations. The bedding provides a place for the worms to go when they are not attacking the primary food source or, should that food source 'get hot' then the bedding provides a place of refuge. It is damp, edible, acid/base neutral (or close), dark, easy to move through, and temperature constant. It is a place to meet other worms, drop off cocoons, or, for the hatchling, to safely grow from babyhood into a young adult. In short, it is home and heaven combined for a worm.

Beddings do not have to be composed solely of organic materials. In fact, it is good practice to add some dirt or fine sand to it so that the worms will have something to put in their gizzards. Worms don't have teeth (although one of my granddaughters is convinced otherwise), and so need to have some grit to properly process the materials passing through them. It doesn't take a lot but there must be some sand or such added to the bedding material. Ground egg shells work and provide some action against acid conditions as well. One thing to remember about the sand or dirt you use for your bedding is that you don't want 'living' soil like you would get from your garden. Why? This is going to be in your house remember? The dirt in your garden is full of all sorts of critters which will just love their new home, multiply rapidly, and cause you a never ending headache! Use pasturized dirt or pasturize it yourself before it goes into the box if you want to avoid the bugs.

Peatmoss (pasturized), shredded paper, shredded newspaper, cardboard, (cut into small chunks), or shredded, aged sawdust, crushed peanut shells etc., well composted and pasturized compost mixed 50/50 with any of the above, will all work well. Commercial beddings are available (Topline does not sell bedding at this time) which have been developed by the professionals to be all the things worms like and have none of the problems of the average home brew. Save yourself some problems starting out by getting the 'pro' stuff or do it the hard way like I did. It took me 4 months to get rid of the small flies that came in some of the bedding materials that I used when I first started! If I had it to do over, I would get the commercially produced bedding and spare myself all the initial hassle.

For those of you who are contemplating raising worms for sale; do yourselves a BIG favor by getting the *complete* Shields Publications Library before starting. The reference library will pay for itself many times over in just your first few months, and give you added profits for the life of your business! We give a specially discounted price to those who order the whole library and throw in a free gift as well. Drop us an email or write for more info on the 'Library Offer'.

About Worm Castings

Worm castings are not classed as "fertilizer". Their contents are far from being equal to the chemical / petro chemical fertilizers available on the market today. When all is said and done however, worm castings are better for the soil, better for the plants, better for the rivers and lakes, better for the planet, better for your health, and better for sustainable agriculture!! Castings do not have 30% nitrogen content but they do not kill every living thing in the ground either. There, I feel a bit better having gotten that off my chest...

Casts or 'castings', are what the worms excrete, ergo, what went into the worm is what is in the cast. Worms change (in their digestive tract), the organic materials, minerals, and gases, as well as compounds and organisms, (which would be otherwise detrimental to plant growth), into soluble (plant usable) forms. They use very little of what they consume volume wise, digesting for nutritional use (mainly microbes like bacteria), and passing the rest as casts.

Almost all of what the worm eats is concentrated, reduced in volume and weight, without losing its mineral, good microbial or nutritional value, or content... and all that is neatly wrapped up by the worm in a semi-permeable mucosa which is itself valuable nutritionally to plants. Studies have shown that worm castings are roughly 5 times as rich as the soil or medium in which they were created. Casts are made up of what is available to the worm so nothing will magically appear in the cast which was not present to some degree in the consumed medium prior to ingestion.

The above mentioned studies were of worms in feral or 'in the ground' states, and not of worms held in boxes or bins (or such is my understanding). Boxed, food scrap and rich compost eating worms obviously enhance the structure of what they are fed as well and, I am sure, manage to concentrate those nutrients in their casts. How concentrated these sorts of castings are, I can not say for sure but, if you take horse manure as an example: feed, at 25C/3N and weighing in at say one ton, then being reduced by the worms to about 200 lbs. of castings, it would seem, at least on the face of it, that those 200 lbs. would be some pretty nifty organic plant food.

Well, if it sounds like hype, so be it... but it's not some fantastic fabrication! Check it out: Worms eat your garbage, excreting casts. The process binds the nutrients consumed into plant usable form, reducing the volume of the original materials, and adding good soil building micro and macrobiotics to the mix. The worm casts are covered by the worms with a slow dissolving, semi-permeable mucus which is both a time release mechanism for the cast's nutritional value, and the source of its extraordinary water retention capabilities. What is fed into the worms then, is converted into a mild topsoil or humus like pseudo-fertilizer which will not "burn" plants, cause oxygen starvation, or other unwanted problems when mixed with the soil of your garden or placed as a mulch layer on potted plants etc. Additionally, assuming that what you fed the worms was solely organic and environmentally stable, the casts are perfect to go on food crops which are to

be grown and sold as "Organically Grown". To really get a grip on that one, go on down to the local 'organic' grocery store and see what one of the tomatoes costs. Castings can be mixed with potting soil (1/3 casts to 2/3 potting soil) to make fantastic seedling starter.

Home Waste Management

Worms are the neatest thing to come down the pike in as long as I can remember! When it comes to managing family waste in an earth-friendly way, they just can't be beaten. About 90% of the waste your home generates can be recycled in one way or another and about 60 to 70% is of organic origin (worm food!). What that means is this, if you separate the recyclable inorganics like metals, glass and plastics, and drop them at a recycler, do some worm assisted outdoor composting to take care of yard and garden 'green waste' as well as a chunk of your trash paper, and feed your indoor vermicomposter all the food scraps, coffee filters etc., you will have reduced your outgoing garbage to the curb (Please take out the trash honey...), to one trip where you were making 10! Even if you aren't super at it, half the trips to the dump would be a real plus to the environment and a lot easier on your back!

OME THINGS THAT KILL WORMS

- Winter: freezing temperatures and sudden cold snaps in the fall.
- Summer: excessive heat and dry conditions.
- Animals: birds, at least 3 varieties of mites, (including the red spider mite), centipedes, slugs, snails, moles, raccoons and fishermen.
- Environment: inescapable heat over 90 degrees F. or under 40 degrees F., ultraviolet light, lack of moisture, extreme acid or base conditions, lack of food, lack of air, poor drainage of container, and anaerobic conditions. Ultraviolet light whacks the little critters too.
- Chemical: pesticides, chemical fertilizers and pesticides, petroleum products, caustic chemicals, high acid or base plant parts or liquids, household cleaners and chemicals including detergents, any household hazardous waste material.

The experts say that the average life expectancy of a feral earthworm is one year or less. Some also speculate that if kept under optimal conditions, without predation, the life expectancy of a worm could stretch on into the realm of immortality! That's a long, long time kids! Even when an earthworm is cut almost in half, the head end may grow a new hind end (regenerate).

WHEN BUYING WORMS

Let the buyer beware!

First some history on the ***DARK SIDE*** of the worm business.

Once upon a time, many years ago, someone had the bright idea that they could sell people "Worm Farm Business Packages" for which the consumer would pay BIG BUCKS if only they could be guaranteed that they could sell ALL THE WORMS THEY COULD GROW back to the person who sold them the start up kit.

The way I hear it, lots of people bought the kits planning to make millions of \$\$\$ by growing huge numbers of worms. The farm would always have a ready buyer (the guy who sold them the worms in the first place), who would buy back as many worms as they could grow.

For many of these new worm growers, when it came time to sell the excess worms back to the fellow who got them started, suddenly he couldn't be found! OR he wanted to buy them for less than they cost to raise... OR occasionally he turned out to be for real and actually wanted the worms to sell to other prospective worm farmers as part of their "Worm Farm Business Package". As long as the package seller can come up with more prospects for worm farm kits, everyone is happy.

As I write this, a fellow from a town about 150 miles from here sits in jail charged with defrauding several people by selling them small start up worm farms for about \$750.00 each. The 'farm' was a large plastic container filled with what looked like very happy and large worms tucked into nice looking bedding. Several of the people who bought from him and their 'farms' were shown on state wide TV news casts.

The police say the scam went something like this: The seller said he had a contract with the Waste Isolation Pilot Plant (salt mine in which to store atomic waste), in the southern part of the state, to supply them with 'super worms' which would eat the atomic waste. He needed people who would raise the 'super worms' for him so that he would have enough 'super worms' to fill the contract. Very convincing ... except the police say there is no contract and the science community is of the opinion that eating salt or atomic waste would be detrimental to the worms. \$750.00 for a plastic box, a couple of pounds of worms and a promise to buy back the excess worms... sounds sorta familiar!

Here's something a little different. Hybrid Worms. I'll make this short and sweet, I know of no scientific evidence that there is, or was, or will be any such thing. Still, people buy these "hybrid worms"... Ignorance is bliss... it's expensive though.

If the hype plunks your greed button, if it sounds too good to be true, if it looks easy, if it has to happen Right Now!, if you don't have the facts, if you don't want to be a sucker... then do your homework BEFORE you buy. 'nuff said.

Quantity has a lot to do with the price you will pay for your worms. Like any business, the seller needs to cover his costs and make a profit to stay in business and feed the kids. If you are buying a ton of worms the price will be lower than if you only want a pound or two. There are other factors involved as well. To get a grasp on the reasons that worm prices go up and down, consider the worms to be like any other perishable farm produce. When the weather gets hot, it costs more to ship, handle, raise, and market them. Some growers will not ship during summer months due to excessive losses in transit. During the winter months, in cold climates, the beds are frozen over and can not be disturbed until they thaw, without killing the worms. Industry wide epidemics have, in the past, caused shortages of worms driving the price up.

Price fluctuation due to supply and demand, shortages and gluts, is the same for the worm farmer as it is for farmers of most other stock. One difference is that the rancher or farmer growing cattle or most other kinds of stock or produce, has various associations working for him to steady the demand and lobby the government. Whereas, the worm farmer has to make it pretty much on his (or her) own.

So the time of year, the condition of the industry, the abundance or lack thereof, and lots of other things will play a role in what you pay for your worms. However, the quantity you purchase at one time will be the biggest factor. The more you buy, the cheaper the worms become. Worms packed 24 or 50 to a container for fishing have to have the container, handling, and delivery costs included in the price. Worms bought by the pound or by the thousand lot don't require so much expense for the grower to deliver or package...

Grade and Species are two other large factors in your cost for the worms. Some species will cost you upwards of \$60.00 per thousand when bought 1000 at a time. (makes \$15.00 per thousand for red worms look pretty good!)

The Grade of red worms is usually just a matter of whether you get all breeders or bed run. Bed run means that the worms you receive will be smaller and of mixed sizes from babies to young breeders. When you order Breeders only, expect to pay a premium price. These are the biggest and best the farmer has to offer. They should be large, mature, breeding adult worms only. Breeders are sometimes referred to as 'bait size'. The bait size or breeders will cost you 2 or 3 times the amount you will pay for 'bed run'.

The thing to establish here is, what do you want the worms for? Going fishing?, or Selling bait worms? In a hurry to fill some orders you don't have enough bait size worms to fill? Then breeders or bait size is what you want. On the other hand, if you want to raise them, fatten them up and then sell the worms as breeders, or if you are using them for compost or garbage munching, the bed run worms will do nicely for you. Bed run red worms can be fattened quickly (2 weeks), and most will, even at the time of arrival, be making egg cases. So if time is not the issue and money is ...

When ordering worms, shipping practices and costs should be examined. Your location, whether it is hot or cold where you are, the time of year, your distance from the seller, and method of shipment, will all play a part in how much gets doled out to the carrier. Most suppliers expect the shipping costs to be paid by the buyer, but some include the shipping costs, insurance, etc. in the price of the worms. Robert F. Shields yearly publication, "Earthworm Buyer's Guide", lists hundreds of suppliers in the US and Canada AND Charlie Morgan's, "Earthworm Selling and Shipping Guide" gives the 'how to' of getting your worms where they need to go, in good condition and at the least possible price.

It is not always best to buy from the lowest bidder. You get what you pay for (on a good day), so it is worth keeping in mind that service, before, during, and after the sale has value as well. Nice little touches, like having the worms arrive in good condition because of the excellent packaging, or finding (in the box), a printed set of instructions on how to properly care for your newly arrived worms, could easily make the difference between success and failure to a start up business venture or, for the home enthusiast, a good experience instead of bad.

Guarantee's cost the supplier money. When shipping worms, it is common practice for the supplier to guarantee the arrival of the worms, at the buyers address, alive. Live delivery guarantees are sometimes abused at the receiving end. "The worms got here but they were all dead", or, "only half the shipment arrived". When this happens, the supplier must go through a ton of paperwork to collect the insured value (if they were insured) and must replace the worms. Most worm growers will honor the live shipment guarantee once but if it happens again, will then refund the buyers money to avoid having to ship over and over again. The Post Office and the shipping companies have various mechanisms to prevent fraud on insured packages. The point is that the grower, when a shipment is lost or the worms killed, loses money. Although it doesn't happen often, the cost of the times that it does must be defrayed (made up) somewhere. The cost of the worms goes up to cover honest shipping practices.

So cost isn't everything! One might even go so far as to say that, "*cost is relative*". Still think not? Then try this one on for size; you order 50,000 worms from a grower, they arrive dead and when you try to get back your \$ per thousand and shipping/handling charges, you are told that the worms were not guaranteed and you should have paid extra to have them insured. Now not only do you have some very smelly boxes to deal with, all those waiting customers won't be getting their worms from you! It won't take many experiences like that to have made it well worth paying 2 or 3 times the price per pound but getting what you paid for when you needed it!

Last summer, as a test order, I ordered 10 pounds of *E. foetida* red worms from a company in the northern part of the country . They arrived here alive and although the boxes were crushed by the shipping company, the worms, after some resuscitation efforts, survived. I do not put new arrivals into my main worm beds nor do I usually keep the bedding in which they were shipped. I throw the bedding into the trash (in a plastic bag), and send it on to the dump (not the compost pile), and quarantine the worms for a month

or so. Well... this time I kept the bedding and added it and the worms, to a box for their quarantine period. Thank goodness I didn't just put them into an existing worm bed! It took about 3 weeks to show up, but show they did... the shipped bedding had termites in it! It took me about half a day to extract the worms, wash them, sterilize the box, mix up a complete new batch of bedding and get things back on an even keel.

Months later I mentioned the termites to the fellow who sent me the worms. He was surprised ... but not overly concerned. It was a near miss for me though! Termites are just about the last thing I want to introduce to my worm beds. Not that they will harm the worms, it's just that they eat the beds, bedding, and food of the worms, then move on over to the shed, the house etc. A good source of cures for these and other insect pests is, Charlie Morgan's book, "Manual of Therapeutic Medications & Pesticides for Worm Growers".

When worms arrive from even the best of suppliers, there is always the chance that the order will be contaminated by one or more undesirable pests or diseases. No reputable worm dealer will knowingly fill orders with sick worms or contaminated bedding. Still, once in a while it happens. It is a very good idea to isolate any newly arriving stock for at least 2 weeks, and it is a good idea for the shipper to use only unused (new) bedding materials when shipping worms. The most common bedding material for shipping is Canadian Peat.

There will always be additional fauna traveling with any shipment of worms. Small white worms (I can't remember their Latin name), which grow to about one inch long, are common arrivals. They don't bother red worms, but eat all the same foods and have no commercial value that I am aware of. They breed prolifically, and can become a problem in commercial beds meant to raise red worms. Ruth Myers, in her book, "A-Worming We Did Go", gives several cures which work on the little bliters. For the home or business using worms to eat garbage, there is no reason to be concerned about the white worms. They eat garbage and get along well with the red worms. When changing the bedding, just don't put back the white worms, return only the red worms to the new bedding and that will control their population.

Many beneficial insects, nematodes (really!), fungus, molds, crustaceans, and bacteria may come in an order. If you are doing composting of the outdoor variety, they will be a huge plus to your efforts and will even be of value in an indoor box so long as they don't get out of hand population wise. That is, assuming that you are not getting the bad guys at the same time ... A good way to get all that biota is to order vermic compost or worm castings and add them to whatever you want to biologically enhance. It works for me! ;-)
BTW: here's a beneficial bug that most people don't realize is; the tiny Springtail is a predator of spidermites... (some kinds of spidermites prey on worm egg cases and baby worms)

Finally, as painful as it may seem, if you are starting into the worm business or want to put some worms to work in your compost pile eating leftovers, or just want them out in the garden, before you buy the worms, get the relevant books and / or tapes and read /

watch them. Your enjoyment, productiveness, and success will depend on what you know... get educated by the professionals. Save your valuable time, and avoid unnecessary frustration. Check out the [Book Section...](#)