



Build Bins

Transcript – Vertical & Vermivillage

Hello and welcome to Build Bins. In this lesson we're going to review vertical and the vermivillage. So vertical and vermivillage: vertical systems are going to be stack systems; anything that has vertical migration and move upward, and that you feed on top and then layer it. The vermivillage tote is one of my favorite worm bins, especially for beginners; it's so easy to use and easy to harvest. Let's go ahead and get into some [indiscernible] details of them. So vertical systems, they're a stacked, nested, or vertical system and they save space because they go up, right, like vertical farming. The vertical worm farm mimics nature. As you know, fresh leaves fall on the forest--fresh leaves, fall leaves fall on the forest floor and the worms migrate up to eat that and they stay in that first--the composting worms will stay in that first four to six inches of soil, compost humus matter.

So fresh material and food scraps and carbon are placed on top. So feeding in stack tray systems, there's not a lot of depth to them generally, where you would put your food on, your produce scraps, and then you'd layer the carbon over top of that. I always want to put the carbon on top and that helps eliminate flies and aromas. When the tray or bucket is full, you just place another bucket or tray on top. These can be made out of pretty much any material. There are several of these on the market. You see them with spouts on them sometimes and then there is I think a bag version where you can squeeze the compost out of the 1 and you feed on top of a big like tray. But they can be made out of old nursery pots; one that we're going to go over is made out of buckets, but these vertical systems include anything where the worm will migrate up as the fresh stuff is added to the top, and then gold is harvested at the bottom. That's the good stuff.

So, stack systems with buckets. What we have here is a bucket and I took some stuff out, material out so that you could see the holes that are in the bottom. And I believe there's some holes in the side. I thought that might help with airflow. I don't think it makes too much of a difference, but really you want the holes on the bottom, or you could cut a piece out and use screen. I wouldn't go anything smaller than a quarter-inch just to allow the worms the ability to migrate up to eat. And then as you go about it, you just stack another bucket on top, fairly simple. Like I said, you can purchase these if you're looking for something prettier to bring into your home, or if you had a utility room, maybe the buckets wouldn't be so bad hanging around, but that's one way to do it. So, each of these blue buckets also has holes in the bottom of it and you just keep layering.

When it gets about half filled up, I wouldn't fill the bucket up all the way for stability, that make a pretty tall tower of compost there, but I've done halfway and that's been fine. And then you just put another bucket on top, fill it up halfway, and then when that's all filled up, put another bucket on top. And then ideally, if you have at least three of these, is a good number, so that might take you about a month to fill up each one. But you want to wait three months before your very first harvest, and then after that, you can harvest more frequently, but you just want to give the worms a chance to get established in the bin, that microbial population up, and also as they lay cocoons, you want to give those a chance to hatch.

What I have found that I didn't like about any stacked tray system, or whether it's--buckets, I don't mind because I put it outside; I actually have a hole I can sink that bucket into for a little stability. It gets pretty windy where we're at, so it helps keep the buckets from being knocked over and it helps insulate it. Outside's not a problem, but when it comes time to harvest, you have to pick these buckets up or tray, whatever it is, and you have to set that somewhere while you're harvesting the compost. Now you do it outside. It's not much of a problem, but some of those stack tray systems, maybe I just had a lot of worms in there, but I would always have worms and partial compost like hanging out the

bottom. And it was always like, oh my gosh. Where do I set this to get the compost in the bottom? So, I started redesigning, experimenting with different worm bins. So, I like this method for a number of reasons. I mean, you can put it outside, you can insulate it, it's a good size for composting, it's inexpensive to make. It's just not very neat, and not that compost needs to be neat, but if you have a smaller space and you don't have the ability to put it outside, we're going to go over a few other things.

So stacked and vertical flow bins. Actually, these are just more examples. I've built them out of all kinds of different things, and because I had been using the stack tray systems that had the spout on them, I was convinced that worm bins needed a spout for the extra liquid to drain out. But truth be told, if you're not overwatering your worm bin, you're not going to have that leachate, that water leaching out of it. So, it's really about proper watering techniques. So being in Phoenix at the time, I decided to forego the spout and I started with these small totes. I had this one is clear, so that when we took it to shows and events and things around town, that people could really like see a neat interaction, and you could like see through it. And if it got to be too much light, I'd put it on the table for a little bit, but this was a fun one to travel with. I do have holes in the bottom of it. It doesn't look like there's a whole lot of material in the lower bin, but the top bin's mostly filled. But I still had holes for water to drain out of that, and that's what that bottom bin is doing.

It's kind of similar to the--maybe what you've heard is a Oscar Jr. worm farm, where you have just a container that sits inside of another container. Anyway, I'm at home because it was a clear container. I had to keep it in a dark space, but we had plenty of room at the time for all these extra worm bins. And then the progression of the worm bins goes on, and this is the first like prototype of the vermivillage. So, all these containers, there just wasn't enough like depth to them like to bury compost in and constantly having to add more carbon and layering it when a lot of times the worms take longer to eat and process the carbon, the browns material, the paper, newspaper, core, whatever you're using. So, in order to save that and not have to continually add so much carbon, I thought maybe a larger worm system, just a larger bin that had some airflow at the bottom, it's what those vents are, and this way I could just bury the food right into there. But see they're up off the ground because I was still convinced that you needed drain holes on the bottom. So that's why that one's sitting up in the other container because there's still drain holes in the bottom. But eventually, I moved away from that, and it's been totally fine.

I haven't noticed any adverse effects to not having drain holes in these plastic totes. I've got one that I've had for like, I don't know, maybe eight years now, and I've moved with it. I like them because they're easy to travel with. They're nice and sturdy, and if you really get into this and you want to take it to schools, it's much lighter to carry around a smaller worm bin or farmer's markets than it is some giant system. So anyway, that's one of the first prototypes. So, stack systems, you want to obtain a container a reasonable size. It may be obvious to some of you that these containers can get heavy, but it wasn't obvious to me when I first started off doing worm farming. I was so excited. I bought the largest storage totes I can get, and I think they were something like three feet long by two feet wide. And oh my gosh, were they just a bear to move, and to harvest. That didn't last very long in those containers so you make sure it's something you can lift. Even if you use plastic totes or whatever, when that's full, that's going to have a lot of material in it. It can get pretty heavy, so keep that in mind. That's why the buckets are pretty good. I've made them in nursery pots too, but your biggest thing is your first bucket isn't going to have any holes in it, your bottom bucket, but every container that you put on top, is you want to put at least quarter-inch holes in the bottom. If you had a bucket with a hole in it, you could just make the hole bigger and either cover it with some hardware cloth just for structure when you pull it up, so everything doesn't fall out the bottom. But there's a lot of ways you can use broken stuff to make worm farms.

And when you have it all made, keep it in a sheltered location. Someplace dry in between 40- and 90-degrees Fahrenheit. This can be done outdoor in the desert. I did this outdoors in Phoenix, Arizona for a number of years. That is where I started all this stuff and I spent about a decade there doing vermiculture there outside, inside too of course, but I just kept them in a shaded carport. I didn't feed them as much in the summertime; I fed smaller amounts. Any decomposing matter, food scraps, whatever it is that you put into the worm bin, that food stock is going to momentarily heat up. How long does that heating phase last? It really depends on what you've put in there and how much you've put

in there. So, I really decreased the number of feedings and sometimes I would make giant ice blocks and put them over top of the worm bin on the lid so that as it melted, it'd drip cool water. That worked out pretty good.

A lot of the worm bins in the summertime, I would completely take off the lids. We had some larger systems which are easier to keep cool. They just have a larger surface area. One was a three-by-three worm wigwam, and I took off the cap of that even though it had holes in it, and I made a frame screen to go over top of it, and that seemed to really help. You really want to let heat out of the worm bin. So, you'll notice that in the summertime, the worm bins will get fairly warm no matter where you're at, and the important thing is to reduce the amount of feed that way it doesn't heat up. And then in the wintertime, as you get going on this, you'll notice that there's a lot more moisture in your worm bin where you may have to add a piece of newspaper, just a whole sheet on top, just to absorb some of the excess moisture. I got really off-topic there, but I want you to be a successful worm farmer too. It's been a lot of fun, and I really like talking about vermicomposting.

So, let's get back to the stack system. The first fill layers, what you're going to do in your bottom buckets, you're going to put a piece of newspaper. Well in the bottom bucket, you don't have to; you can start just in the bottom bucket. You put a layer of carbon down, and then your food, and then more carbon. In the next bucket that you fill up, the second bucket or container put newspaper down first either in a whole sheet or chunk it up; it'll just help. It'll slow down the decomposition process a little bit, and that's a good thing. It lets the worms finish processing the first container and really encourages them to stay there for a little bit longer, and it lets everything that you're putting on top slightly decompose and get inoculated with microbes. And that is beneficial because worms, while they do eat our garbage and produce scraps, they are really microbe farmers. They consume a lot of microbes. So yeah, just keep layering carbon and food, carbon and food, and then put in your worms.

Now if you started this system and you're brand new, and you're buying worms, then what you want to do is get your bin all set up, and we let it set for a week or so if you can wait that long, and then put your worms in there. And the first night, if you've done mail order worms, you're going to want to put the bucket or the container somewhere it's going to get light, especially if this is an indoor vermicomposting situation. Worms after being shipped are very anxious to check out their new digs. So, if you don't put a light on them overnight, when all the lights are off, or it's dark outside, they will crawl out of the system. And this only happens the first maybe night or so. You have to really just put a light out there, flashlight, I don't know something. I used to have a little solar-powered light I would just keep out there by the worm bin when I had to add new worms, or I was switching systems around because I have had them crawl out on me. So, there's a little insider tip to keep your worms. If you mail order them, shine a light.

So, this is a really cool stacked and vertical system that we have made, and what it is, it's the three trays lined up, and they have a quarter-inch hardware cloth on the bottom of every tray. So, it's just like the buckets, only much prettier. So that's us opening it up, so you can see it's got hardware cloth. The very bottom, the smallest one, because it actually tapers up like an inverted pyramid, but the smallest one has a solid bottom, and the second one has hardware cloth, and the third one on top also has hardware cloth. So, we've since sold this one, but I wanted to show it to you just so you can get ideas on all the different systems that are available to make, and you could make this square if you wanted to; you don't have to do the inverted pyramid, but you can make them out of anything, and you can make them any shape. The best thing to do is find one that fits with you, and what your lifestyle, and something that you want to work, and look at every day.

So, the vermivillage build. We are going to go over this one in detail. It is one of my favorite worm bins. I love the wooden bins because they are absolutely beautiful, but they have a lot of weight to them. So, unless you've got a helper to help tote around materials when you go around, or if your worm bins going to be more stationary, then wooden's a good choice, but this plastic worm bin that you saw in the green containers. We're going to go over how to build those. What you're going to need is a tote with a lid, a drill, quarter-inch bit, two-inch hole saw, two-inch vents, tape measure if you want the holes to be even, and then a marker, and windows screen. The windows screen's optional. It goes with the vents. I just like adding a bit of extra airspace, but we'll go over that and see what it is.

So, the next step would be, once you have all your vents in place, is to drill some air holes on the top, and this really helps for heat to dissipate and leave the system. Now if it's somewhere outside and it's pretty warm, you can always take the lid off and like crack it a little bit for more airflow. I have made some of these where I just cut a hole in the center of the bin and put a screen in, a mesh screen. You can do that as well, but the holes are just for airflow. So, any way that you can provide your vermicomposting bin with airflow, the better. Alright, Miss Mayet, ready? To demonstrate, we're going to drill some holes through. Vermivillage. So, this is the tools that we used to build this. It's a tape measure, drill bit, a hole saw, and there's two-inch vents. I did have some metal screen and as you see from the pictures that will follow, I just put the screen behind the vent to kind of form an air pocket so that the vent won't get filled with compost. And I do believe they help. Some people actually go the extra route and install a PVC pipe with holes drilled in it between the vents, and these have been working just fine without the PVC pipe.

So, as you can see, I'm very experimental. Basically, when I got into worm farming, I just started building all kinds of bins to see what worked best for our application and you will find something that works best for you. So, and then there, truth be told, I couldn't find our two-inch hole saw, so this one was a little bit smaller. So, what I did was I actually measured the distance up and across so that the vents would be even, and then I had to trace the vent on there, and then drill it out with a hole saw even though it was a little bit smaller than I could find. Sometimes tools have a way of walking around. Anyway, so that's how I fix that and that's what I'm just showing you there just so that they would be spatially spacious and even. There's the vent and the screen there. As you see I put the screen first and then I stick the vent in there; just kind of wanted to give you a close-up of that so you could see more what it's about. And then this is the final lid. Daughter had a great time; always appreciate her help drilling holes in the top. Now if there are pieces of plastic when you drill through, don't--I mean take them out. Don't let them fall into the worm bin. Usually what I do is I'll take my pocketknife and any that got some plastic or burrs on them, I'll just go ahead and clean them out, and that is the vermivillage.

What I really like about this is that it's simple. Because of its coloring, it doesn't have to be kept--I mean, you wouldn't want to put it in full sun. I'm just saying it's not clear so that it doesn't have to necessarily be in a dark room. It has a lot of depth to it and surface area. While the worms don't necessarily need the depth, the depth is really nice for when you're burying produce scraps. It just makes it so much easier, and the worms can really work that carbon and break it down quite a bit, along with your produce scraps. This is my second favorite worm bin. I do like the worm towers, but now that we live in the country, we don't need them so much anymore. They were great when we did the urban farming and leased farmland, but now that we're here with the critters, these kind of bins and the next lesson we're going to do is all about wooden worm bins, for those of you that like a more natural approach. The plastic does breathe pretty well. The wood breathes even better, but I really liked being able to use this bin. And then if you go to schools, and different places, you can size them appropriately for traveling or farmers markets. I mean, you could even get cheesy with different color coding and stuff like that, but it works out really well, and I hope you enjoyed the vermivillage. Thank you.