Vermicompost 101

Transcript – Module 1

Good day, and welcome to Vermicomposting 101. I'm Hassena Kassim. I've been vermicomposting for nearly two decades. My background is in horticulture, arboriculture. I hold degrees in urban farming, Western herbalism, and holistic nutrition. A few years ago, well four years now, the family and I decided to move from Phoenix, Arizona to rural western North Carolina. And wow, what a change it has been and continues to be, but we absolutely love it. We bought a house in a hayfield, and now it's got some woods around it too. Now we raise dairy goats, bees, chickens, we have livestock guardian dogs, lots and lots of worms of course. We have several different composting methods that we employ depending on where we need it and where is it being created. We cultivate for the health of the earth, the critters, and us. Soil should be one of the farmers, or any growers, first crop because healthy soil is the key to unlocking many, many things. It'll decrease pest population, decrease needs in fertilizer, plants are more resilient for drought.

Healthy soil should be your first crop and that's why composting is so important. It adds a continuous supply of nutrients back into the soil, and best of all, you can make it yourself. So, during this course, you're going to learn all about worms. We're going to talk about different bin options, what to put the worms in, feeding ratios, bedding materials, carbon and nitrogen, and we're also going to go over some solutions to what may or may not be common problems in a worm bin; just some things we've learned along the way. So, thank you so much for joining. I greatly appreciate you being here and let's dig in.

The US composting council estimate four and a half pounds of potentially compostable waste is generated daily; that's per person, every single day. That is a huge amount of fertilizer we could be making at our farms and homesteads. Even city dwellers, but why worms? What makes them so different than other composting methods? Well, many of you have probably already experienced composting with the hot thermophilic bins outside where it can take six to nine months to get usable compost. Worms have a ferocious appetite. Yes, ferocious. They can, one pound of worms, they can transform half a pound of waste every day, and that is why I truly enjoy worms. And if you had five pounds of worms, then it'd be two and a half pounds of compost or vermicompost that could be created every day. That is a huge amount, and they love produce scraps; any kind of food waste, they will transform.

So now that you might be interested in what a worm needs. Just a sturdy bin, whether it's a bucket, a storage tote, a wooden bin, anything, just a good sturdy bin. You'll need bedding and that's the carbon; that's the part of the bed, brown but don't heat up. Food. Donate your greens, that's the nitrogen, and what they'll need there is just your produce scraps, your banana peels, the broccoli stalks, the parts of the produce that we don't eat. They prefer a dark space, a moderate temperature and lots of airflow are essential. So here are some bin options. That's the vermi-village or the green plastic storage tote; those work really well for small spaces. A nice deep bin where you can bury your produce scraps in and not have to worry about attracting flies or rodents or other creepy crawlies. It has air vents on the bottom to allow airflow. Worms actually breathe through their skin, so airflow is really important. That big wooden bench is our vermi-bench. Yep, we make composting furniture. This way we are stacking functions multiple ways. You lift up the lids, and there are the worms, but there are many options available to vermicompost enthusiasts.

The plastic bin, the round bin is something similar to a can-o-worms or worm-in. It has shallow bins for those that don't generate much waste, and they're also stackable. You can stack the bins, you can make worm tea if you happen to water the system thoroughly, you can harvest the water on the bottom of it. For our purposes, I've used these before; I think they work really great if you don't generate a lot of waste. Now that commercial bin with the two folks standing next to it, that is an amazing commercial bin. Both systems are considered continuous flow because you put the food scraps in

there, and then you lay your carbon on top rather than digging down in. The larger bin, we won a grant at the Phoenix Zoo and were able to get that installed, and it made nearly 80 pounds of vermicompost for us a week. We instituted a composting program there where all the food scraps from our break rooms, our employee break rooms, our food prep were 100 percent composted, and the worms played a huge role in making that goal a reality, and it's what most commercial worm farmers use.

To harvest the worm compost, you turn that crank by the gentleman's knee. The compost falls to the bottom as you continuously add fresh material on the top. Worms migrate up to eat, so you don't really have a whole lot of worms in the finished vermicompost and if we're putting it out in the garden, a few worms won't be so bad: it'll be pretty good. Or if you want to compost right in the garden, enter the worm tower. I'm pretty experimental with the vermicomposting efforts. I believe everybody should get worms and the worm tower was one way that we tried to appeal to everyone that might be doing vermicompost or interested in it. If you don't want a bin in your house, the worm tower would be a good option, and basically, you take anything that might be a pipe, you drill holes in the bottom of it so the worms can migrate in and out to eat. And then you sink the pole or the post, whether it's a bucket, anything, some kind of pipe, you put that in the ground, and then you dump your food scraps into it. The worms migrate in there and they eat, and then they leave, and they poop all over your garden making vermicompost right where you need it. We did add a screen to the top of the pipe, the clay pipe, and then just put a terracotta pot on top of that just to help kind of keep down the flies.

With this kind of system, we did throw a couple of handfuls of mulch here and there, but for the most part, it was just food scraps and the screen kept the flies in there as opposed to flying all around us. So how to choose a bin. Ask yourself, what will I use the compost for? Right in the garden? Then you might want to consider a worm tower. If you're going to use it for potted plants and seedlings, choose an easy to harvest system like the continuous flow. If you're only going to harvest biannually for the start of a growing season, consider a larger system that would allow you to harvest once or twice a year.

Hello, we wanted to show you some visual representations of carbon and nitrogen. So, carbon is going to be your bedding material. It's not going to be your feedstock; it's going to be your bedding material. It's the part of the worm bin that doesn't heat up. Now, this is very important because as you feed the worms, that spot where you fed is going to heat up temporarily and the worms need a source of carbon in there so they can get away from the heat. So, we're going to show you some things that will be carbon and nitrogen. What have you...my lovely daughter Mayet [phonetic]--

Mayet: Thank you, finally.

--has brought some things in to talk about carbon and nitrogen.

Mayet: I have myself an apple. They are good to eat.

They are, they are. This would be a source of nitrogen.

Mayet: Mh-hmm.

And now it's got a lot of bruises on it. It's been tumbling around for a while.

Mayet: And the apple in this situation does fall far from the tree.

So again, if you cut this up and increase the surface area, you're going to attract more bacteria to the food stock quicker, and worms are basically microbe farmers. Where we say, oh worms eat my compost, they actually eat the microbes that grow on the compost. So, by chopping it up, you increase the surface area. It will break down more quickly because more bacteria are able to attach to the surfaces and then you can harvest your compost sooner.

Mayet: And then I have this broccoli stalk which is a...I forget what it is.

It's nitrogen.

Mayet: Nitrogen, gotcha.

Mh-hmm and if you save like your stocks and your vegetable peelings to make veggie broth, what we do is we just have a container in the freezer and we get enough of these, well actually, the goats get most of it now.

Mayet: Yeah.

Let's be honest, but before we had goats, I would keep the container in the freezer and I would just throw these in there, and then when I had enough, I'd make a big pot of veggie stock. And then when I'm done with the vegetables in the veggie stock, I would give those to the worms, but nowadays, mostly go to the goats. But you can cut these up, and they will break down quicker in your worm bin too.

Mayet: And then I have some alfalfa from the goat barn.

Alfalfa, even though it's green, it's considered a source of carbon because it's already dried hay. So, any of your dried hay and straw is going to be considered...bless you [indiscernible]...is going to be considered carbon. Now, we grow some of the hay on the farm here. There have been some studies about certain herbicides sprayed on hay. Anything in like the nightshade family, Solanaceae family, like is going to be your tomatoes, eggplants, and peppers. Unfortunately, a lot of hay is sprayed because a lot of those plants are toxic to animals. So, something to keep in mind if you happen to have a lot of hay in your worm bed or your compost bin. You might not be able to grow those plants, but you could always plant a couple of those seeds. See what germinates and then you'll know if your whole compost has been contaminated as a test run.

Mayet: And I have paper.

Paper, yes.

Mayet: Everyone loves to draw on it.

Yes, so paper is considered carbon. Not a lot of nutritional value for the worms though. What I would do previously is I would shred some paper and I would soak it overnight, and in the morning, I would dump the water off into like just a flowerbed, and then I would take the paper and give it to the worms. What we also do with our paper is make firebricks now too, but the worms really do seem to like the paper. Corrugated cardboard, they really love corrugated cardboard. The corrugated cardboard I'll just put into a bunch of chunks in the worm bin, and if you open up the corrugated cardboard, a lot of times you'll see the worms like almost like they're lined up and racing. It's pretty neat.

Mayet: Awaits for food.

Yeah, they also like to lay their cocoons in the cardboard. They seem to really like it maybe because it's an immediate nutritional source.

Mayet: And now I have some wood.

Some wood. Yeah, wood is really good. Based on nutritional value in there, it seems like the wood attracts a lot of pill and sal bugs. It's my only bummer about the wood but it's a good nutritional source. If it's chunkier, it can add air pockets which is really important for a worm bin; you don't want it to get compacted. I mean they're in there crawling around, but they breathe through their skin, so it's really important that the worms have good airflow for oxygen.

Mayet: And now I have some dry leaves.

Dry leaves are an excellent source.

Mayet: [Indiscernible].

Dried leaves are an excellent source of carbon and nutritional value. A lot of times in the winter, I will just rake up a bunch of leaves and just put it on the worm bins. I put it in the compost as well as the gardens and it's really good for the soil and the worm bin.

Mayet: And I have--

It's also a free source of carbon which is good.

Mayet: --little pieces of wood.

So, any kind of wood chips, you know, if you live by an arborist--

Mayet: And put it in your mom's favorite vase and break it. Actually, don't do it. [Indiscernible].

That's true. Yeah, so any kind of woodchips would be good in there. Now if it's fresh wood chips, it is going to heat up even though it's a source of carbon. All that moisture in the worm bin, it's going to get on the woodchips and start the decomposing process, and you're going to see a lot of mycelium growing in there. Certain things like certain ficus leaves don't seem to break down; anything that looks like it has like a waxy coating on it, those type of leaves aren't going to break down. Ficus is the one that comes to mind the most. There might be others out there like ficus nitida and stuff like that, but otherwise, your leaves are good, and the barn chips are okay.

Mayet: Next is this.

Dryer lint. Yeah, we collect the dryer lint, and we'll do different things with it. We'll put it in toilet paper rolls to make fire starters; it's really good for that or you can compost it.

Mayet: And another thing you can do is roll up your mom's shirt and put it in there.

Yeah, she really likes the worms.

Mayet: [Indiscernible] I like my mom; that's a complete lie.

So, anything that's made out of cotton can go into the worm bin, maybe a sock that can't be mended, old shirts, old rags, paper towels would be a source of carbon.

Mayet: A sock that you got glue [indiscernible].

Mm-hmm. Yeah, so those are some common sources of carbon and nitrogen. Remember, carbon is brown, and it doesn't heat up. Nitrogen is food and it does heat up.

Mayet: Oh, we have one more thing here. Come here, come here.

This is Bonster [phonetic], one of our--

Mayet: One of our puppies, she's my favorite.

So why did you bring her in here?

Mayet: Because she's actually one of these things.

Oh, is she? Which one is she? Do you remember?

Mayet: No.

Okay, so you can compost dog hair.

Mayet: But not the dogs.

Not the dogs, no. That would've been a bad idea.

Mayet: Why are you eating that? Give me that. Don't eat that. I know you want to be a healthy puppy, but don't eat mom's apples. Those are for class, not for eating.

Anyways, dog hair, pet hair can also be composted. If you cut your own hair, you can put that in your worm bin. It does take a little bit to break down and we don't put it in our commercial bins, but in our vermi-bench we do because that is compost that we're going to use. I just don't think I'd be comfortable selling compost with hair in it, but it does break down and it does work. So, thank you so much, Mayet, and thank you, Bonnie.

Mayet: Bonnie, stop eating the vegetables.

I hope that helps explain a little bit more about carbon and nitrogen. Carbon and bedding materials. So, like we talked about in the video, carbon is the part of the worm bin that doesn't heat up. You can use cardboard, finished compost, shredded paper, composted woodchips, coconut core, or any non-heating materials, your dryer lint, your shredded paper, the leaves; remember this is the part of the bedding materials that's not going to heat up. The nitrogen is the feedstock; it's what the worms like to eat. They just happen...I just thought that was a great photo with the pumpkins and the worms crawling out of it. Worms love pumpkin. So, your food scrap, your cucumber peels, your carrot tops, your kale stocks, your apple cores, your pumpkin parts, even if it's moldy, it's fine to go ahead and put in. In moderation, depending on the size of your system, you can use coffee grounds, onions, garlic, and tomatoes. I avoid citrus or spicy foods in the indoor worm bins just because they are smaller in size and they would not break down as well or as quickly as we would like. And then worms like smoothies too. We basically have a blender that we use just for the animals.

Occasionally we'll make the worms a smoothie that way we increase the surface area of the materials, and the bacteria can move in and break it down quicker. We also make smoothies sometimes for our goats or other animals, but the worms really enjoy, and you can make compost really quick with this, and then just add your worms. Layers of bedding material, your carbon, your coconut core, your paper, your shredded paper, it's all good; it's carbon, and then just add your feedstock, your nitrogen, your food scraps, your leftovers right on top. Again, the worms don't mind if it's moldy. Chop it up into small enough pieces as you can. We used to have a couple of contracts with local juice bars and the juice pulp, the worms just love. It was nice small bits, a wide variety of foods, and it broke down really quickly. Just make sure that you do rotational feeding. Put your food stock, your nitrogen, your leftovers, whatever you want to call it, put it on the worm bin, and then pile some carbon on top of it or dig a hole in your bin, and put the food scraps in there.