

## WormEzine Vol. 2 No. 4

News and information from Mary Appelhof  
about vermicomposting, worms, and other critters that live in the soil.

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For the Small Print, scroll to end.

They laughed when I said worms eat my garbage,  
but I showed them how, and now thousands say the same thing

A WORD FROM MARY APPELHOF aka Worm Woman

Dear Worm Workers,

Worm bin outside temp 38 degrees F (3 degrees C) , worm bin 38 F ((3 C). I had to poke around to find worms, but then found several clumps about the size of a golf ball. The worms were glistening, pink, and smooth. It had warmed up and was spring like, then we had another cold snap, with ice and snow. Do you suppose the worms were aggregating to conserve heat? Bin is still full of enchytraeids.

Earth Day 2003 is just around the corner. This is the 33<sup>rd</sup> anniversary of the event founded by Senator Gaylord Nelson in 1963.

Join others and me in celebrating Earth Day this year by speaking out in favor of a clean, green environment that will support humanity, but also diversity for all earth's creatures.

Until next month ...

Mary Appelhof

“Changing the way the world thinks about garbage ...”

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1=====FEATURE=====

### **Why Teach Composting in your Homeschool? By Mary Appelhof**

Composting can provide so many opportunities for learning in your homeschool you will wonder why you didn't think of doing it before. After all, how many activities can you select that will enable you to develop science, math, language, art, history, geography, and many more subjects year after year as your children grow older? Add to that the further benefit that every home produces food waste that has to go somewhere. Getting your kids to help with the garbage because it's interesting and fun beats penalizing them with the chore any day.

I spent several years teaching high school biology, but my work for the past 30 years has been developing, producing and distributing excellent educational resources on vermicomposting. I am happy to share some of what I have learned here.

By composting or vermicomposting (composting with worms), your children will develop knowledge and a sense of responsibility for taking care of their own wastes in the way that nature does, by cycling nutrients from one kingdom to another. The food wastes come from the plant and animal kingdoms, bacteria and fungi break these wastes down, protozoa eat the bacteria and fungi, and the materials they leave behind are nutrients plants can again use. Identifying the five kingdoms involved in composting can be just one of many biology lessons.

#### **Composting and vermicomposting compared**

Composting is the biological reduction of organic waste to humus. When worms are involved, it's called vermicomposting. Compost refers to both the process and the end product. For example, one *composts* (verb) leaves, manure and garden residues to obtain *compost* (noun) that enhances soil texture and fertility when used in gardens.

Composting usually has a high-temperature phase (over 140 degrees F) as heat-loving bacteria release heat during the breakdown of the simpler materials in a pile. These temperatures are too high for worms, so to do vermicomposting, you have to learn enough about the needs of the worms to keep them healthy and comfortable. Basically, a worm composting system requires only an aerated container, moist bedding, a small amount of soil, the right kind of worm (redworms, or *Eisenia fetida*), and food waste. Once you set it up, a

worm composting system is simple to maintain. All you have to do is add food waste on a regular basis, add fresh bedding as needed, see to it that proper temperature and moisture are maintained, and harvest the vermicompost 2-4 times per year. Frequency for harvesting depends upon climate, amount of food waste processed, and your desire for the nutrient-rich worm castings.

To be effective and get the heat-loving bacteria going, backyard composting requires about a cubic yard of garden and yard wastes, leaves, and a nitrogen source such as fresh grass clippings. That's a large volume for most suburban yards. The compost pile also needs to be turned to ensure that the compost gets oxygen and to get the materials on the outside exposed to the higher temperatures inside the pile. Master composters who have done both kinds tell me they think vermicomposting is much easier because the worms do the turning. They tell me the worms are definitely more fun!

### **Which do I want, aerobic, or anaerobic composting?**

Whether you do composting or vermicomposting, you want it to be aerobic, in other words, you want oxygen present. Aerobic means that the bacteria, fungi, protozoa, nematodes and redworms take oxygen from the air and combine it with the linked carbons in their food source. They make more bacteria-protoplasm, etc. and give off carbon dioxide as a waste product, just as we make more human-protoplasm from our food and breathe out carbon dioxide. Carbon dioxide is an odorless, colorless gas, so the end products of aerobic processes don't usually have unpleasant odors.

Anaerobic composting, however, is not pleasant to be around. It stinks. If your compost pile is too wet, or your container doesn't have air holes in it, or you have put too much food waste in the worm bin to balance the amount of bedding, you can get foul odors. These may include alcohols, phenols, organic acids, and other products that result from breaking down organic materials. I like to put it this way; the time you get odor is when you put the lid on the garbage can. Make air available throughout a worm bin or compost pile, and you are less likely to have offensive odors. That's why worm bins have holes drilled in them, or have top and bottom surfaces exposed to air.

So what are some of the things you can do with your kids in your homeschool centered on composting and vermicomposting?

Inventory the kinds of wastes you have around and inside your home which are compostable. Include food waste; paper waste, animal manures (llama, sheep, horse, cow, poultry), garden vegetation, and leaves, grass clippings. Refrain from putting dog or cat feces in your compost pile or worm bin. As carnivores, some of the parasites that may infect them can be transmitted to your family. Not fun!

Assess your climate . . . can you do composting year around? What adjustments do you need to make to compost or vermicompost in winter? Or summer?

Decide whether you want to do backyard composting, vermicomposting, or both.

Determine whether you want to use a containerized system, and, if so, which one? Will you build a bin as a family project? What design will you use? What sources of information? Remember, there are pros and cons to every system—the key is to choose one and start. You

can adapt your system as you go through the learning process. The best way to learn is by doing!

What kind of maintenance will be required? Who will do it?

How will you use the end product? Compost? Vermicompost? Compost tea?

What will the costs be? (Container, materials, time)

What will the savings be? (Reduce use of garbage service, save water, save money on purchase of fertilizer for garden, save the environment) Even if you don't save money, it is worth it to start small and build. Composting and vermicomposting both cycle wastes the way nature does. What is toxic for one kingdom is food for another, and if you process your wastes through all five kingdoms, you will be restoring the earth, not polluting. Doing this makes you feel good because you are doing the right thing.

### **Garbage math**

As your family gets into the subject matter of composting and vermicomposting you will find all sorts of chances to develop math concepts and practice math skills. Carbon to nitrogen ratio. Worm to garbage ratio. Water to bedding ratio. How big should a container be to process X pounds of garbage? How many liters is an 18-gallon container? How many pounds of water in a gallon? How thick a layer of vermicompost can I spread on my 20 ft x 40 ft garden? How do I make up a potting mix that contains 10% worm castings?

### **Biology**

Many families find it more fun to do vermicomposting than backyard composting. A compost pile just sits there and gets smaller. You can't see much happening because it's mostly the microorganisms than are breaking down the organics. The worms in a worm bin are big enough to see and they're more interesting to watch. You can watch them move away from the light, you can see them congregate around certain kinds of food. Using a magnifying glass or a microscope you can see the hearts beating in very young worms. You can find cocoons in the bedding, set them aside in a dampened container and perhaps be able to observe a baby worm hatch from its cocoon. (See video clip of this on my website at <http://www.wormwoman.com>)

### **Language arts is just the beginning**

Composting provides lots of opportunities to develop language skills--new words to learn, definitions to think about. It's fun to do word-building exercises. Vermi-, for example is based on Latin for worm. What other words can you come up with that use vermi- in them? How do you think vermicelli got its name? Or vermicide? Every child needs opportunities to write descriptions, and stories, to be able to communicate ideas and processes, both verbally and in writing.

There really is no limit to the range of subject skills children can explore with vermicomposting and composting as their jumping off point. Art, geography, history, music and community service are just a few.

## Community service

A group of homeschoolers in Kalamazoo plans to give presentations to community groups to teach them about vermicomposting. They have formed a Roots and Shoots club based on Jane Goodall's work. Roots and Shoots activities focus on three program areas, care and concern for 1) the environment, 2) animals, and, 3) community. The kids decided that learning how to do vermicomposting and teach others about it met all three goals, so they have started by setting up a worm bin and learning how to take care of it.

## Home business opportunities

Vermicomposting can provide a unique opportunity for a home business, especially if you live near a popular fishing lake. You can use worms to process your organic kitchen wastes, then count the extra worms into bait cups and sell them to bait shops or directly to fishers. Cody B is a successful entrepreneur and homeschooler who started his worm business when he was 8. He uses his vermicompost on his little aloe vera plants and will soon be selling the vermicompost. He also sets new customers up with bins, worms, and lessons for a set price. Cody's speaking presentation at his local fair won him Grand Champion in the 4-H intermediate division, which led him to the State Fair and a blue ribbon. Read more about Cody at <http://www.wormwoman.com/acatalog/cody.html>

## Many vermicomposting and composting resources available to guide homeschoolers

You can see that vermicomposting and composting will give you many opportunities to make your homeschooling relevant to solving environmental problems, to meeting educational objectives, and to taking care of household chores in a fun, interesting manner. Join the fun!

### Resources:

Available at: <http://www.wormwoman.com>

*Worms Eat My Garbage*: How to set up and maintain a worm composting system by Mary Appelhof. 162p Kalamazoo, MI: Flower Press 1997 Basic how-to book that has taught thousands of kids, their parents, and grandparents how to set up maintain a worm composting system. Ages 10-adult  
[http://www.wormwoman.com/acatalog/Wormwoman\\_catalog\\_Worms\\_Eat\\_My\\_Garbage\\_3.html](http://www.wormwoman.com/acatalog/Wormwoman_catalog_Worms_Eat_My_Garbage_3.html)

*Worms Eat Our Garbage: Classroom Activities for a Better Environment* by Appelhof, Fenton, and Harris. 232p. Kalamazoo, MI: Flower Press 1993. Jam-packed with over 150 activities using worms to develop math, science, observation, language, and many other skills. The book will give you activities for years! Ages 8-through high school  
[http://www.wormwoman.com/acatalog/Wormwoman\\_catalog\\_Worms\\_Eat\\_Our\\_Garbage\\_17.html](http://www.wormwoman.com/acatalog/Wormwoman_catalog_Worms_Eat_Our_Garbage_17.html)

*Soil Biology Primer*. Elaine Ingham, et al. 49p Ankeny, IA: Soil and Water Conservation Society. The best soils have millions of organisms in every teaspoon, the poorest merely hundreds. Bacteria, fungi, protozoa, nematodes, mites, beetles, and earthworms—they make soil alive by their presence, and their activities makes nutrients available to plants. Beautiful photographs, clear charts, and readable text make this book a basic for soil biology. Ages: high school-adult.

[http://www.wormwoman.com/acatalog/Wormwoman\\_catalog\\_Soil\\_Biology\\_Primer\\_67.html](http://www.wormwoman.com/acatalog/Wormwoman_catalog_Soil_Biology_Primer_67.html)

*Compost, By Gosh! An Adventure with Vermicomposting*, by Michelle Eva Portman. 42p. Kalamazoo, MI: Flower Press. Delightful color picture book for the younger children in your homeschool describes in charming rhyme the basics of having a worm bin, what goes into it, and how plants grow from the humus produced by the worms. Ages 4-94.

[http://www.wormwoman.com/acatalog/Compost\\_By\\_Gosh\\_.html](http://www.wormwoman.com/acatalog/Compost_By_Gosh_.html)

*Wormology*. By Michael Elsohn Ross. Minneapolis: Carolrhoda Books. 48p. A charming, informative, beautifully illustrated book for youngsters that combines cartoons, charts, good line art, and beautiful photographs with accurate text. Leads children through scientific methodology, worm anatomy, predation and fun experiments. Ages 8-12.

[http://www.wormwoman.com/acatalog/Wormwoman\\_catalog\\_Wormology\\_11.html](http://www.wormwoman.com/acatalog/Wormwoman_catalog_Wormology_11.html)

*Wormania!* Video with footage of live worms at work, including baby worms hatching from a cocoon, beating of worm's four pairs of hearts incorporated into storyline with original songs by Billy B and the Brennan kids. 1995. Kalamazoo, MI: Flowerfield Enterprises. Ages 4-adult.

[http://www.wormwoman.com/acatalog/Wormwoman\\_catalog\\_Wormania\\_39.html](http://www.wormwoman.com/acatalog/Wormwoman_catalog_Wormania_39.html)

*Worm Bin Creatures Alive through a Microscope*. Video by Warren Hatch. Close up views of myriad creatures found in a worm bin—springtails, mites, nematodes, centipedes, sow bugs, many more. If you want to know what they are, get this video! Distributed by Flowerfield Enterprises, Kalamazoo, MI. Ages 6-adult.

[http://www.wormwoman.com/acatalog/Wormwoman\\_catalog\\_Worm\\_Bin\\_Creatures\\_Alive\\_Through\\_a\\_Microscope\\_26.html](http://www.wormwoman.com/acatalog/Wormwoman_catalog_Worm_Bin_Creatures_Alive_Through_a_Microscope_26.html)

*Worm Drive: The Musical*. Ron Wright. CD/ROM. This folksy and entertaining ecological comedy illustrates the importance of taking care of our soil and protecting our environment. Ages 6-12. [http://www.wormwoman.com/acatalog/Worm\\_Drive.html](http://www.wormwoman.com/acatalog/Worm_Drive.html)

Available elsewhere:

*Composting in the Classroom: Scientific Inquiry for High School Students*. Nancy M. Trautmann and Marianne E. Krasny. 116p Dubuque, IA: Kendall/Hunt Publishing Co. 800-542-6657 Comprehensive book on composting basics with advanced concepts and experiments. Ages: high school-adult.

Websites:

<http://www.wormwoman.com>

<http://wormdigest.org>

<http://yucky.kids.discovery.com/noflash/worm/index.html>

3=====WORM POWERING KIDS UPDATE=====

We're getting wonderful, enthusiastic response from the Worm Powering Kids program available on our website. People who commit to reading *Compost, By Gosh! An Adventure in Vermicomposting* by Michelle Portman to a group of kids sign up and tell us a bit about the group, the event, and the time. We're trying to get lots of people reading it during Earth Week

(Earth Day is April 22), but people are listing dates before, during, and after. I have read it to 3<sup>rd</sup> graders in Albuquerque, senior citizens at a retirement home in Kalamazoo, and college kids at a university. Everyone, no matter what age, laughs at the line, "Now waste turned to gold Has come out their behind!" This little book does such a beautiful job of getting the whole concept of vermicomposting across. It really is a delight to share with others.

We have 49 individuals signed up for Worm Powering Kids so far, from 17 states and four countries! We have 43 from the U.S., four from Canada, and one each from New Zealand and the Philippines. Of the states represented, ten are from Michigan, four from California, three each from North Carolina, and New Jersey, two from Colorado, Illinois, New York, Oklahoma, Oregon, Pennsylvania, Washington, and Wisconsin. One each from Georgia, Indiana, Maine, Massachusetts, and Tennessee. In Canada we have three from Ontario and one from British Columbia.

Just think about it, during Earth Week, hundreds and hundreds of kids across the continent and in the Philippines and New Zealand will be learning about how worms can turn food wastes into wonderfully dark nutrients for plants! And we'll be sharing our passion and interests with children in the time-honored tradition of reading them a book!

To order your copy of *Compost, By Gosh!* go to our website at <http://www.wormwoman.com> If you sign up for Worm Powering Kids, we'll pay the shipping for your copy. Fill out your order form as usual. You can't bypass shipping at your end of the ordering process. Just be sure to write in the comment line "Worm Powering Kids ... free shipping please" so that your account will be credited properly.

#### 4=====NEWS FLASH=====

- A. BUY-BACK OPERATION COLLAPSES. We have been getting phone calls and emails from individuals who are looking for places to sell their worms because their previous "market" was either out of business or, at least, not responding to phone calls. They had purchased contracts with a company that set them up with an initial stock of worms, provided some grower instructions, and promised to purchase the biomass of worms generated as the worms reproduce; claiming to have contracts to sell the worms for use in cleaning up landfills and other waste-management projects.

For a while, the company was able to purchase worms from existing growers in order to have worms to ship to new purchasers of contracts, thereby establishing a semblance of credibility. The company, B&B Worm Farms, Inc. of Meeker, Oklahoma, is now under scrutiny by attorneys general in as many as nine states. On Thursday, April 3, Ben Chandler, Attorney General of Kentucky, obtained a temporary restraining order against the company when he filed a Consumer Protection lawsuit against B&B alleging that they failed to post the necessary \$75,000 bond required for selling business opportunities in the state. The attorney general alleges that B&B made false claims about the earnings potential for the worm growing businesses. This action has essentially put B&B out of the business of selling additional contracts. Now that they are not selling contracts, there is no market for worms for the contract growers.

My response to inquiries is that I do not know of any market for large quantities of worms at this time. I believe that the most viable end-user markets will be for worm castings, not the worms themselves. But I believe that it will take time, effort, and, very

likely, further investment to develop end-user markets for worms and/or worm castings. How this will all play out with the current presumed glut on the market of hundreds of thousands of pounds of worms is highly uncertain at this time.

If you are in the position described above, your state attorney general needs to hear from you. Your complaint should be in writing, along with copies of your contract, a copy of your check or other proof of purchase, and any other pertinent documentation you can provide. Filing such documentation will place you in the most favorable position to make a claim against the company, but there is no guarantee that B&B has the financial resources to provide refunds.

I encourage you to keep up with the postings on the Worm Digest Forum at <http://www.wormdigest.org/forum.cgi> and at Happy D Ranch WormTalk at <http://www.HappyDRanch.com> where you find discussions of possible opportunities.

Much of the information for this piece came from the website for the Attorney General of Kentucky: <http://kyattorneygeneral.com/news/2003rel/worm.htm>

- B. WORM DIGEST will devote its next issue to challenges presented by this situation. The editor, Zorba Frankel, and Kelly Slocum are also planning a series of seminars to be held in areas where there are concentrations of worm growers. The plan is to cover such subjects as what are the real, marketable products derived from worms? What are castings and how does one produce a safe, quality product? What is involved in marketing your product? How do you go about writing a business plan? How do you form a cooperative? Venues for these seminars will be organized by the B&B grower community, and Kelly's and Zorba's intention is to provide the best information they can to help growers explore their options. No dates, locations, or costs are available at this time, but the Worm Digest Forum should have specifics when they become known. <http://www.wormdigest.org/forum.cgi>

5=====Q & A=====

Hi-

I live in north Idaho in a wooded area. My question relates to "mutt" red worms (not named species). If I dig into the woodland soil there are no worms BUT if I start to pile kitchen waste or leave a bale of hay overwinter (sic) I find tons of red worms. Where do they come from? I have read your book and other articles on worms but all the information is about buying pedigree worms and doesn't give me a clue where the "If you build the compost pile they will come" worms [come from.]

Any information you can give me will be most helpful as I'm a master gardener that mans our Farmers Market Information booth and I get lots of questions on worms. Your book has answered most of the questions but the above one has me puzzled.

Dear Kelly,

Thank you for your thoughtful question about the kind of worms you might find in a woodland environment. I am not a taxonomist, so would not be able to say for certain whether

the worms you find are *Eisenia fetida*, even if you sent them so me. Dr. Sam James of Maharishi University in Fairfield, Iowa, does such identification for a fee. His email address is: sjames@mum.edu

In the interest of one Master Gardener sharing info with another, however, I did look up what Dr. John Reynolds has to say about *Eisenia fetida* (he uses the old spelling *Eisenia foetida*) in his book, *The Earthworms of Ontario*. (now out of print) I quote:

“Olson (1928) found this species in manure and decaying vegetation where moisture concentrations were high. Cernostitov and Evans (1947) and Gerard (1964) recorded its habitats as manure, compost heaps, and soil high in organic matter, as well as forests, gardens, and under stones and leaves .... In Tennessee, Reynolds et al. (1974) recorded scattered distribution of this species with it occurring most commonly under logs and debris and at roadside dumps.”

At any rate, my guess is that the worms you find are either *Eisenia fetida*, their close relative *Eisenia andrei*, or *Lumbricus rubellus*. The fact that they come when you pile kitchen waste or leave a bale of hay out over the winter says that they prefer high amounts of organic material, so they almost certainly would be suitable for setting up contained vermicomposting systems. If you can get them to reproduce in a contained environment and they do the job, I wouldn't hesitate to use them for worm composting.

You don't have to buy worms from commercial growers if the worms you can find do the job you are asking them to do.

I hope this helps.

Sincerely,  
Mary Appelhof

6=====COMING EVENTS=====

A. April 13 1:15 p.m. PIERCE CEDAR CREEK INSTITUTE. Mary Appelhof will read *Compost, By Gosh!* and talk about worms following Sunday brunch in Hastings, Michigan. The Pierce Cedar Creek Institute is a relatively new ecological education center and biological field station located on 600 acres in Barry County in SW Michigan. Its beautiful campus has earth-friendly buildings including a visitor's center, education building, research labs, and on-site housing. The popular Sunday Brunches offer delicious menu selections enjoyed in a dining room with a beautiful view overlooking the rolling fields of the Institute. Select from either 11:00 or 12:30 seating when you call (269) 721-4472 for reservations. Cost: Members - \$11 for adults and \$5 for children (ages 3-10)  
Non-member - \$13 adults and \$6 children (ages 3-10)

B. April 16 11:00 a.m. SOUTHWEST MICHIGAN COLLEGE celebrates Earth Day early with events including a dollar tree sale, hybrid autos, renewable energy technology, a sidewalk art competition, and trail hiking. Mary Appelhof will be giving a presentation on worm composting to homeschoolers and others at this modern-day version of an Earth Day teach-in. SMC is located in Dowagiac, MI. For further information call Tom Huber at 269-782-1211.

C. Apr. 22 EARTH DAY. 7:00 p.m. Mary Appelhof will read *Compost, By Gosh!* At John Rollins Bookstore, 6414 South Westnedge Ave., Portage, MI.

D. April 23 EARTH DAY EXPO at Allegan County Math and Science Center. Mary Appelhof will give two types of presentations to kids during this all day event. One will be her animated, participatory presentation, "Worm composting---it's easy, it's fun, and you can do it, too!" The other, for younger children will center on reading *Compost, By Gosh! An Adventure in Vermicomposting*. All sessions are filled.

E. May 17 9:00-5:00 p.m. TILLERS INTERNATIONAL will host an all day Worm Composting workshop with Mary Appelhof in Kalamazoo. Located on a century-old farm, Tillers International provides an extensive program on appropriate technologies based on animal power for developing countries. Their intern program includes working with the oxen, making implements for harness and plow, blacksmithing, and barn raising. Using PowerPoint presentations, overheads, and hands-on activities we'll teach you how to get started, what to watch for, make compost teas from your compost, and maintain a worm composting system that will last forever. For more information, contact Chris via email at [tillersOx@aol.com](mailto:tillersOx@aol.com). Fee for this all-day workshop is \$45.

F. Mary 20 MICHIGAN RECYCLING COALITION Mary Appelhof to present *Compost Teas: The New Kid on the Block* at the MRC conference at the Radisson Hotel in Kalamazoo.

G. June 2003 ZERI TRAINING. A third, three-module ZERI Training is scheduled for mid-year. in Santa Fe, New Mexico. Contact Lynda Taylor for more info: mail to: [lyndataylor@cybermesa.com](mailto:lyndataylor@cybermesa.com)

H. June 23-25, MASTER GARDENERS CONFERENCE, East Lansing, Michigan. Mary Appelhof will be giving two presentations, one on Compost Teas, the other on how to set up and maintain a vermicomposting system. This conference is open to Master Gardeners only. For more information, visit the web at <http://www.msue.msu.edu/mastergardener>

I. October 10-11, BEST MANAGEMENT PRACTICES IN VERMICOMPOSTING, Portland, Oregon. Pete Bogdanov's annual seminar is getting to be the primary opportunity to be brought up-to-date on what is happening in the Vermiculture industry. Put it on your calendar and try to get there this year. For more info: <http://www.vermico.com>

7 =====PRODUCT HIGHLIGHTS=====

Order a t-shirt or Wormania! video during month of April and receive a free Worms Eat My Garbage button! Mention FREE BUTTON in comment line.

- A. Worm workers like to wear Worms Eat My Garbage t-shirts when they are staffing booths at fairs and festivals, and giving presentations. These sturdy shirts of 100% cotton have the image silk-screened in plum ink on ash-gray fabric (what worm worker wants to wear a white t-shirt?) We have large and extra-large sizes in stock. [http://www.wormwoman.com/acatalog/T\\_shirt.html](http://www.wormwoman.com/acatalog/T_shirt.html)
- B. Wormania! video. Have you ever tried to photograph worms? It's a challenge, isn't it? They don't like light, so they're always trying to get away. They're best looking when their bodies are moist and glistening, but being exposed to the air makes them lose moisture and dry out. They're too small for average lenses, and too large for macros. Wormania! the video has some amazing footage of worms. For example, it shows

footage of the mesmerizing beating of the five pairs of hearts in *Eisenia fetida*. Seeing baby worms twisting and turning inside their cocoons is fascinating, especially when you look at the pulsing of blood within the vessels. You may have seen a baby worm hatch from its cocoon, but did you capture the image for posterity? It's on the video, even more dramatic than the brief clip you can see on my website. Wormania! is fun, it gives you information you won't get anywhere else, and you can watch it over and over again without getting bored. It's ideal for classrooms, for families, for recycling coordinators who teach about worm composting. Order it at [http://www.wormwoman.com/acatalog/Wormwoman\\_catalog\\_Wormania\\_33.html](http://www.wormwoman.com/acatalog/Wormwoman_catalog_Wormania_33.html)

8=====ABOUT THE AUTHOR=====

Mary Appelhof is founder and president of Flowerfield Enterprises, which develops and markets educational materials on vermicomposting. Its publishing imprint is Flower Press, publisher of the how-to book *Worms Eat My Garbage*, the classroom activity book and curriculum guide, *Worms Eat Our Garbage: Classroom Activities for a Better Environment*, *The Worm Cafe: Mid-scale vermicomposting of lunchroom wastes*, and *Diabetes at 14: Choosing tighter control for an active life*, which is not about vermicomposting, but is an invaluable asset for anyone affected by diabetes.

9===== THE Small PRINT=====

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