

Appendix F Why Do Redworms* C-R-A-W-L Off?

(Information from Happy D Ranch: www.happyranch.com)

There are two types of earthworms commonly called “redworms,” *Eisenia foetida* (also called red wigglers, manure worms, tiger worm, brandling and compost worms) and *Lumbricus rubellus*. They are not to be confused with nightcrawlers (also called dew worms.) The redworms may reach up to 3” in length, have distinct rings and are pale to dark, reddish-brown in color.

In a well-maintained vermicompost bin, red wigglers will live quite happily. But under some circumstances they may try to escape.

C - Change of Habitat

If worms have been raised in an environment with a specific type of feed, then transferred to a system that uses something completely different, they may crawl away from the new environment.

If you purchase worms from a grower ask the following questions:

What bedding mix was used?

What food source was used?

What species of worm was used?

To keep worms in the new bin until they adapt to the new environment try the following:

Leave a light on directly over the bin, especially at night. They are light sensitive and will avoid light.

If the bedding mix you are using is very fresh it may be too acidic (mixes such as peat moss, coir, leaves, etc.) Add crushed eggshells to the bin for grit and to adjust the pH.

R - Rain

Just before a rain or thunderstorm or any low-pressure system, worms may crawl up around then lip of a bin. They appear to be sensitive to changes in barometric pressure.

A - Absence of Air

Worms do not thrive in anaerobic (with out air) conditions. If the bin has become too wet, compacted, or smelly, the environment may have become too inhospitable to the worms and they will try to leave. Check to see you have sufficient drainage holes in your system the bedding is lightly fluffed and you are not overfeeding.

W - Water

Too much or too little water can be a reason worms leave a bin. Too much water compacts the bedding, may create anaerobic conditions. If you are using finer materials for a bedding mix add small twigs, chunks of cardboard (torn up cardboard egg cartons work well) straw, etc. in the bedding mix. Lack of water may dry the bedding mix out, reducing the population of microorganisms that worms eat. If there is enough water worms will have a shiny glisten to their skin. They will be lively and active.

L - Lack of Food

If worms are not fed regularly they will go looking elsewhere. But do not overfeed. If you feed on a rotational basis in your bin and if you have undigested food after one week do not feed.

Appendix G Under What Conditions Do Redworms *T-H-R-I-V-E*

T – Temperature is optimal between 68°-77° F. At temperatures below 40° worms are less active. At temperatures above 85° worms become stressed. Too much nitrogen material in the bin may cause the bin to heat up and worms will die unless they can escape. Remember, this is a *cold* method of composting.

H – H₂O – Moisture. The worm bin needs to maintain a moisture level of between 75%-85%. The bedding should feel as wet as a sponge just ready to leak water when saturated. The bin should be well drained so there isn't saturation. Too much water may create anaerobic conditions, which are not hospitable for worms.

R – Recycle organic vegetative material only such as: fruits, vegetables, egg shells (for calcium) shredded paper, cereals, coffee and filters, limited citrus (the oil is an irritant to worms) aged manures, tea bags, legumes, pastas. **DO NOT** feed dairy, oils, salty or pickled foods and meats. These may attract pests. **NO** pet waste. They contain pathogens that may not be killed in a worm system. Feed when you see worms are involved in the food that is there.

I – Invertebrates and microbes are found in a healthy worm bin system. Beneficial creatures found in a worm bin that are harmless to people and plants are: pot worms, aerobic bacteria, gnats, molds, flies and their larvae, spiders and mites, millipedes, fungi, springtails, protozoa, beneficial nematodes.

Invertebrates and microbes to avoid are: anaerobic bacteria, (a stinky smell) ants, (bedding is too dry) beetles, (remove) centipedes, remove (carefully!) flatworms, (remove and destroy.)

V – Ventilation - All creatures in the worm bin system need air and lots of it! Carefully fluff the bedding if it becomes compacted.

E – Environment - A pH of 5.5 is preferred. Worms may tolerate a range from pH 4- pH9. Worms are sensitive to light so keep the bin dark. Good bedding is a combination of predominantly carbon sources such as leaves, shredded paper, coir, peat moss, straw, etc. A small handful of soil will help to inoculate the bin with microorganisms. In a healthy thriving bin worms may eat their weight in bedding and food scraps each day. Redworms double their population every 3-4 months and mature in 8 weeks. One healthy worm could produce 96 worms in 6 months. There are about 1000 worms in a pound. A pound of worms needs one square foot of bin space to support the population.

For more information about the fascinating world of worms go to:

<http://www.cityfarmer.org/wormcomp61.html>

<http://www.co.whatcom.wa.us/publicworks/pdf/solidwaste/worm.pdf>

<http://www.wormdigest.org/>

Books: Worms Eat My Garbage by Mary Appelhof

The Earth Moved by Amy Stewart