

5 What is Composting, Anyway?

Every horse owner has to deal with the same by-product of horse ownership — manure. Horse owners have a common obligation to practice sound environmental practices. Michigan is fortunate to have a strong Right-to-Farm Act to address many of these issues. Composting is one of the manure management options that horse owners can employ as a viable manure management strategy that also complies with Right-to-Farm guidelines.

Why Compost?

The most common answer given to the question “Why should I compost?” is probably that true composting reduces a manure pile’s volume by up to 50 percent. This is a major benefit, but composting horse manure has many other advantages, too. Once manure is properly composted, it is no longer considered manure — it is simply organic material and natural nutrients critical to plant growth (Figure 1). When



Figure 1. Raw horse manure and bedding can produce good quality compost.

manure is composted, the nutrients are converted into a more stable form. This conversion makes the nutrients more readily available for plant growth. Manure contains nitrogen, one of the most

important nutrients for grass growth, and grass is an important crop for most horse owners. Increasing nutrient availability decreases the need to use synthetic fertilizers to improve pasture yield and quality.

Another benefit of composting is the reduced moisture content of the pile. Reducing moisture also decreases the odors and flies normally associated with piled manure. During the composting process, the material should reach temperatures of 130 to 170 degrees F. At these temperatures, fly larvae, parasites, fecal coliform bacteria and many pathogens cannot survive. Many weed seeds are destroyed at these temperatures as well, such as quackgrass, foxtail and tall buttercup (a potentially toxic plant).

Compost makes an ideal additive to a productive horse pasture (Figure 2). Other uses for com-



Figure 2. Spreading quality compost can increase pasture fertility.

post include landscaping projects, nursery crops, lawns and gardens. Some horse owners have been able to market compost to others for these uses. Many others spread the wealth in their

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communities by giving away compost. In this way, horse owners can improve neighbor relations while reducing manure volumes on their farms.

What is Composting?

Composting is NOT a pile out behind the barn that sits there until it is hauled away or turns to dirt sometime in the next century. Composting is a process that requires time, management and some equipment. Composting is a biological process that creates an ideal environment for naturally occurring microbes that digest organic material. These microbes require air to survive (aerobic), so the pile must be turned or have air forced into it. Moisture and the pile's temperature are also important factors. Ideal composting occurs when the moisture is around 50 percent and the temperature is between 130 and 170 degrees F. A handful of good compost should feel like a wrung-out sponge. If the manure contains a high amount of shavings, water usually has to be added to approach a 50 percent moisture content, and the expected high temperature is apt to be closer to 140 degrees F.

Composting Methods

Several composting methods are currently in use. Not all methods will work on every farm. Time, space, equipment cost and volume of manure to be composted will dictate the method used. In most cases, a water source will be necessary to keep the compost pile from drying out. Because of the increased popularity of environmentally friendly manure management alternatives, composting equipment and methods are constantly being improved. The following methods are arranged from least to most technical.

1. **Passively aerated pile** — For this method, vented pipe is used to allow natural air currents to flow through the pile, keeping it aerated (Figure 3).



Figure 3. Passively aerated pile using PVC pipe.

2. **Actively aerated pile** — In this method, air is forced through a vented pipe with a fan or leaf blower.
3. **Transfer bins** — This method involves multiple bins. Manure is moved from one bin to the next when aeration is needed. The last bin in the row should yield finished compost (Figure 4).



Figure 4. Transfer Bin System.

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4. Turned windrows — For this method, manure is piled in long, narrow, peaked rows. These rows can be turned using mechanical turners or by simply moving them from one place to another using a front-end loader (Figure 5).



Figure 5. Creating compost windrows.

5. Vermicomposting — For this method, manure is piled in small windrows and redworms are added. The worms digest the material to create very high-quality compost. The limitation of this method is that the worms survive only in temperatures above 50 degrees F (Figure 6).

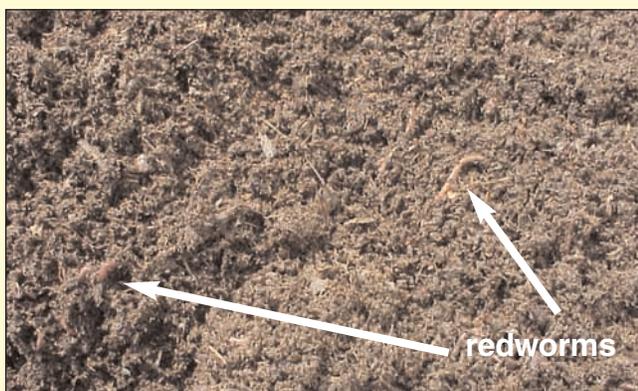


Figure 6. These redworms are aerating the manure pile.

6. In-vessel composting — For this method, manure is placed in a large container that can be turned or aerated with oxygen.

Conclusion

Although several viable manure management solutions are available, composting is perhaps one of the most beneficial opportunities for horse owners. The ability to turn a product that can strain neighbor relations into a product that has positive environmental impacts and may enhance neighbor relations can benefit the entire horse industry. For more technical assistance on any of these composting methods, contact the MSU Extension Equine AoE Team and read the last bulletin in this *One Horse or a Hundred series*.

For more information and materials online, visit these Web sites:

www.emdc.msue.msu.edu

www.msue.msu.edu/aoe/equine/

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