A Guide to Composting Horse Manure

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The Benefits of Composting
How to Make Compost Happen
Composting Methods
Compost Troubleshooting Guide
How to Know When Compost is Ready for Use
What to Do With Your Finished Compost
References
Bin Designs

If you've been stockpiling your manure in a single pile for as long as you can remember, you may have found that if you dig into the middle of the pile, you'll find something that resembles dirt more than it does manure. If this is the case, at least some of your manure has already gone through the decomposition, or composting, process. Manure that has been left uncovered in large, spread out piles will eventually compost. However, this version of composting often creates unpleasant odors because there is not enough air reaching the inside of the pile. These piles also rarely reach high enough temperatures to kill parasites, fly larvae, weed seeds, and pathogens. The following information on composting will help you learn how to compost all of your manure, instead of what's just in the middle, speed up the process dramatically, and help heat manure up to temperatures that will kill parasites, fly larvae, weed seeds, and pathogens.

The Benefits of Composting

Horse Health

Reduce flies. A well-managed compost pile will reach temperatures high enough to kill fly eggs and larvae in manure. By reducing the amount of uncomposted manure you have, you'll also reduce breeding grounds for flies.

Kill parasites and pathogens. The high temperatures achieved through composting also kill worms and pathogens (organisms such as bacteria, viruses, fungi, and protozoa that are capable of producing an infection or disease). This is especially important if you are spreading your manure in the same fields your horses graze in or on vegetable gardens.

Convenience and Aesthetics

Reduce odors. A well-managed compost pile will be free of the odors often associated with an uncomposted manure pile.

Cut your pile in half. Composting reduces bulk and has 40 to 60 percent less volume and weight than uncomposted manure. That means you can reduce the amount of your manure pile by about 50 percent by composting!

Kill weed seeds. The high temperatures achieved through composting will kill most weed seeds.

Improve marketability. Compost is much more marketable than uncomposted manure and is often used by topsoil companies, landscapers, nurseries, and organic farmers. You may be able to sell your compost and actually make money out of that mountain of manure!

Even out grazing patterns. Horses grazing in pastures spread with composted manure (instead of fresh manure) are more likely to graze normally and are less likely to restrict grazing to areas with the thinnest application rates.

Healthy Soil

Improve aeration and water retention. Adding compost to soil builds good soil structure and texture, increasing the amount of air that can infiltrate and the amount of water it can hold. Adding compost to heavy clay soil loosens the packed soil by opening up pore spaces that, like little tunnels, carry air and water down into the soil. Sandy soils, which tend to let water drain away too rapidly, are also improved with the addition of compost. The fine particles are united into larger ones that can hold a greater amount of water. By increasing the soil's moisture-holding capacity, compost also helps control erosion that would otherwise wash topsoil away.

Supply nutrients. When fresh manure is spread on a field, about 50 percent of the nitrogen is in a highly soluble form and will be washed out by rain when it is spread on a pasture. In compost, however, 95 to 97 percent of nitrogen has been converted to a much more stable form and will be slowly released, allowing plants to use it over a longer period of time. Compost doles out nutrients slowly when plants are small and at greater rates as soil temperatures warm up and the major growth period begins. (Soil microorganisms that release the nutrients from compost work harder as temperatures increase.) The benefits of adding compost will also last for more than one season. Composted manure releases about 50 percent of its nutrients in the
Compost also last for more than one season. Composted manure releases about 50 percent of its nutrients in the first season and a decreasing percentage in the following years. This means that with constant additions of compost, the reserves of plant nutrients in the soil are being built up to the point where, for several seasons, little fertilizer of any kind may be needed.

**Bacteria, earthworms, and pH.** Compost also supports essential soil bacteria; feeds earthworms and allows them to multiply; and gradually changes soil pH levels that are either too low (acidic) or too high (alkaline).

**The Environment**

**Protect water quality.** Because the composting process converts nitrogen into a less soluble form, it is less likely to be washed out of manure and into ground water and surface water. Excessive amounts of nitrate in drinking water can cause health problems such as blue baby syndrome and may be linked to cancer and birth defects. Recent samplings of wells in northern Whatcom County have found nitrate levels above the U.S. Environmental Protection Agency's safe drinking water standards.

**Protect fish and shellfish.** When rain falls on soil rich with compost, raindrops seep into it. When rain falls on packed soil rain runs off the surface, creating erosion and carrying soil particles to nearby waterways. Sediment can smother trout and salmon eggs and make water cloudy, making it more difficult for fish to find insects to eat. Raw manure also contains fecal coliform bacteria which is commonly used to measure contamination of water from human or animal waste. The coliform bacteria may not necessarily produce disease, but can indicate the presence of other bacteria that may cause infections, hepatitis, and other illnesses. When coliform bacteria is found in the water around shellfish growing areas, it often leads to shellfish bed closures. Composting kills most of these coliform bacteria as well as viruses and parasites that may be a concern to human health.

**Conserve our natural resources.** Using compost instead of chemical fertilizers can reduce our use of non-renewable resources like natural gas. Approximately two percent of the natural gas consumed in the United States goes into the manufacturing of nitrogen fertilizer.