

Horsekeeping & Water Quality: Composting

If you have horses, you've got manure. Chances are that you already spend some time each day cleaning stalls and picking up manure in your pasture, paddock, and riding ring. You could simply stockpile the manure and discarded bedding, and use it for your garden; but fresh manure is not really ideal for that. You could spread it on your fields, but you don't have a tractor. The pile just gets bigger ... The neighbors start to complain about flies and odor, and the growing pile slowly begins to obstruct your view of the beautiful horses in your back yard. Friends and family refuse to take any away to put on their gardens, because it's yucky and full of weeds. Still the pile grows ... what's a poor horse owner to do?

With a little extra effort, you can compost your manure and create a valuable, useful, "black gold" that will make your gardens beautiful and your property more pleasing. Envious neighbors will soon be competing with your friends and family for a wheelbarrow full of the beautiful, fluffy stuff.

What's so special about compost?

Composting your manure has many benefits:

- Compost is a wonderful soil amendment, rich in nutrients and organic material.
- The heat generated in the composting process kills worm eggs and parasites, reducing the likelihood of parasite infestation in your horses.
- The heat also kills weed seeds, enhancing its value as a soil amendment.
- Flies will be reduced because their breeding grounds will be eliminated.
- The volume of material you begin with will be reduced by about fifty percent.
- Properly prepared compost is virtually odorless.
- It reduces the chances that manure-contaminated runoff from your property will reach ponds and wetlands near your property.
- It reduces the chances of contaminating groundwater and private wells in the area.
- One averaged-size horse produces about fifty pounds of manure daily, about 8 tons per year!

What is composting, anyway?

Composting is the process of managed, accelerated decomposition.

During the composting process, microorganisms break the organic materials into smaller particles and build new molecules. In doing so, they give off carbon dioxide, water vapor, and heat. Composting accelerates decomposition by promoting the growth of microorganisms. The heat that is generated kills weed seeds and reduces pathogens, worm eggs and parasites. Odors are virtually eliminated from the final product, which will be approximately half the volume of the material you started with. The finished compost is a valuable soil amendment, adding nutrients, organic material, and texture to the soil.

Composting is a balancing act. Providing ideal environmental conditions for microbial growth accelerates the process. Just enough water, air, carbon, and nitrogen getting piled, turned, and aged without contaminants makes for good compost.

How do I get started?

You can get started with composting just by building piles of manure combined with bedding, leaves, grass clippings, and other materials. Microorganisms love company, though, and your pile will need to be at least one cubic yard in size for the process to really work. It can be much larger. Ideally, you'll build one or more bins that will allow you to build and manage your composting process. You can find several sets of plans for building simple, inexpensive composting bins in the sources listed at the end of this fact sheet.

To avoid creating pollution at the composting site, make certain your compost pile is located a minimum of 50 feet from ponds and streams, and 100 feet away from drinking water wells. Make certain to contain any runoff on-site. If possible, a roof over the compost pile will prevent rainfall from washing away nutrients and help you to control the moisture levels in the pile, while avoiding contaminated runoff leaving the site.

Horse manure and bedding contain the carbon and nitrogen necessary for successful composting. Oxygen is also essential. The pile must have sufficient air spaces for the microorganisms to breathe while they work, and allow the resulting carbon dioxide to exit. Water is another requirement, ideally at a moisture content of around fifty percent. If the compost feels like a freshly wrung out sponge, the moisture level is perfect.

The challenge is to ensure the proper proportions of the materials. The type of bedding you use and the typical daily volume you discard will substantially affect the ease and rate of composting. Different types of organic materials compost differently. You'll need to customize the process to fit your specific combination of manure, bedding, and other organic materials. You can find the best mixture by developing a clear understanding of the process, accurately measuring materials, and going through some trial and error. A working compost pile should be turned occasionally. This will help maintain air spaces in the pile, distribute moisture, and keep the microorganisms working. Since the pile will generate heat as it works, you'll know it's time to turn the pile when it starts cooling down.

Nutrient and soil conditioning value of compost

For effective composting, you'll need the right combination of nitrogen (manure and/or grass clippings), carbon (shavings, wood chips, leaves), air, and water.

Depending on the size of the piles and the diligence with which you manage them, you could have finished compost in three to six months. You'll know it's finished when it no longer reheats after turning, the volume is reduced to one-half, and the product looks more like soil than anything else.

The major fertilizer components of manure and compost are nitrogen, phosphorus and potassium; many other trace and/or grass elements are also present. In general, livestock manure compost contains about 0.5% nitrogen, 0.4% phosphorus, and 0.2% potassium. In addition to the nutrients it provides, applying compost to the soil can improve its physical structure by adding organic material that improves aeration, moisture retention, and permeability.

Additional information and resources:

- <http://www.extension.umn.edu/agriculture/horse/care/horse-manure/> "Manure and Pasture Management for Recreational Horse Owners", by the University of Minnesota Extension Service. Includes plans for building a composting bin, detailed discussion of the composting process, information on pasture management, and an extensive list of additional sources of information.
- Natural Resource Conservation Service (NRCS) works with farmers on issues relating to the best use of our natural resources. This includes pasture, manure and mud management for horse owners. Find them in the phone book under federal government, US Department of Agriculture, Natural Resource Conservation Service.
- Conservation Districts also work with farmers and livestock owners, often for smaller, non-commercial places, on similar land management assistance. To find out about their services and get on their mailing list, contact your local Conservation District by calling the NRCS office. The NRCS will be able to tell you the name, location and phone number of your Conservation District.
- Massachusetts Department of Environmental Protection – Malcolm Harper, 319 Program Coordinator: 508-767-2795 or malcolm.harper@state.ma.us.