

# Composting

This fact sheet is one of a series written for people with rural acreages or small farms. It is geared to help you install a component or change a management habit that will benefit your farm operation, protect water quality, and protect the other resources on your property and in your community. Referred to as 'Best Management Practices', they are widely accepted as beneficial to improving animal health and farm operation, and in protecting the environment and quality of life.



Snohomish  
Conservation  
District  
425-335-5634

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Managing horse manure poses a problem for most horse owners, but especially for those people that keep 1 to 5 horses on fairly small acreages. The manure often ends up leaching into groundwater or washing into streams during our frequent rain events because the pasture is unable to effectively utilize the applied manure. In addition to protecting our surface and grounds waters, composting:

- ❖ Reduces parasite reinfestation of your horse because heat destroys worm eggs.
- ❖ Eliminates the breeding ground for flies.
- ❖ Produces compost good for gardening, yards, or for use by neighbors.
- ❖ Improves the aesthetic value of your property.

The composting system outlined below is suitable for 1 to 5 horses and can be adjusted for the number of horses you have, the type and amount of bedding you use, and how you want to use the finished compost.

**Site Selection.** Locate the compost bin on a dry and level upland part of your property near your stalls and paddocks. This eases the chore of cleaning up and saves you time.

**Construction.** A two-bin system can be built in a weekend and can run anywhere from \$150 for a cherrywood-timber bin to \$1000 for a two-bin system built with treated 4 X 4's. An optional concrete pad will run another \$1000.

**The System.** A two-bin system allows you to store manure and stall wastes in the first bin until full, and then start filling the second bin while the first bin decomposes. To effectively and quickly compost, you will need to tarp, turn, and water each bin. The tarp keeps the compost from becoming too dry in summer and too wet in winter, conditions that will greatly prolong the composting process. The tarp also keeps nutrients you want for your garden from washing out and contaminating ground or surface waters. Turning the bin contents provides oxygen to the bacteria and other little critters that break down the manure into a fine textured natural fertilizer.

Regular and frequent turning will speed decomposition. However, without a small tractor, this can consume quite a bit of time and effort. While air permeates to a depth of about 3 feet, a couple of perforated 4 inch PVC pipes placed into the center of the bin will assure a more even supply. You still need to turn the pile occasionally to make sure that manure on the outside is moved to the center so that the heat will kill off any parasites and weed seeds.

The compost needs to be kept as damp as a rung out sponge. Using a garden hose, water the pile when you turn it. You can also wet each load that you put in before adding it to the rest of the pile.



The ratios of carbon, nitrogen, water and oxygen are very important to the composting process. The proportion of carbon and nitrogen should be maintained at approximately 30 parts carbon to 1 part nitrogen by weight. With this ratio, microorganisms can decompose the material quickly.

As a general rule, coarse, dried out material like straw or corn stalks has very little nitrogen. Green wastes such as grass clippings, manure, and vegetable wastes are high in nitrogen. You can either layer the two components, and wet down with water, or you can chop and mix the two and then add them to your pile.

Chopped materials tend to decompose faster because of the increase in surface area as a result of the chopping. Chopping can be done with a special bin, available through catalogs, by running over materials with a lawn mower, or by hand chopping.

**Three types of Composting**  
*Hot Composting*  
*Cold Composting*  
*Vermicomposting*

**Hot Composting**

Hot composting requires more work, however, it creates a finished product in less time. The composting season coincides with the growing season. When conditions are favorable for plant growth, those same conditions work well for biological activity in the compost pile.

Hot piles do best when the Carbon - Nitrogen (C:N) ratio is kept at a 1 to 1 ratio. For layering, each layer should be 2 to 4 inches thick. Some people like to mix their carbon and nitrogen sources, using equal amounts of each. If you are low on a nitrogen source, try adding a small amount of commercial fertilizer. Apply at a rate of 1/2 cup of fertilizer for each 10-inch layer of material. Do you have neighbors with rabbits? Try asking them for rabbit pellets. You can also add a few shovel fulls of soil to help get the pile off to a good start. This will add some of those organisms that are needed to decompose the material.

At a minimum, the pile should have dimensions of 3' x 3' x 3'. For best heating, make a heap that is 4 or 5 feet in each dimension. While a bin will help to contain the pile and improve aesthetics, it is not absolutely necessary.

As decomposition takes place, your pile will shrink. It will reach temperatures of 110 to 160 degrees Fahrenheit, killing most weed seeds and plant diseases. Start turning the pile when the internal temperature peaks at about 130 to 140 degrees. Compost thermometers are handy for tracking temperatures.

**Cold Composting**

Cold composting can be as simple as piling grass clippings and dry leaves on the ground or in a bin. This method requires the least amount of maintenance. It works best if you have little time to tend your pile, have only a small amount to compost, or are not in a hurry. Composting is often a combination of the hot and cold processes.

**Materials high in nitrogen**

- Vegetable wastes
- Grass clippings
- Cow, horse, chicken manure
- Coffee grounds

**Materials high in carbon**

- Corn stalks, straw
- Bark, wood chips, sawdust
- Leaves, small branches
- Paper

**Vermicomposting**

Vermicomposting uses worms to compost. This doesn't take much space, and can be done year-round. It is especially effective for kitchen scraps. A 1 x 2 x 3.5 plastic bin will be enough for a family of 6. Drill 8 to 10 holes in the bottom of the bin for drainage. Line the bottom with a fine mesh and place a tray underneath to catch drainage. Place newspaper shreds at one end of the bin and add worms and a small amount of food scraps.



Red worms work best and can be purchased at garden stores or collected in the garden. Keep the bin in a cool, dark spot, away from extreme temperatures. Keep adding small amounts of scraps, too much may result in rotted material. In about 3 months the worms should have changed the bedding and food wastes into compost. At this time, add fresh bedding to the other side of the bin and more food scraps. The worms will migrate over to the new food source. After a couple weeks, open the bin in a bright light, the worms will migrate down and you can harvest your finished compost!

For more information on composting or for designs for bins, check out these sources:

- Your local Solid Waste Department
- The Cooperative Extension Service
- King County Master Composter Program
- or your local library
- Check out websites on the internet for sources of red worms too!



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**What not to add to your compost pile**



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|--------------------|----------------|
| Butter, Mayonnaise | Meat           |
| Bones              | Sour cream     |
| Cat or dog manure  | Salad dressing |
| Fish scraps        | Cheese, milk   |