

# How to Compost and Use Horse Manure

If you care for horses on your own place then you have, no doubt, wondered about what to do with that huge mound of manure and stall waste generated by your horse. In fact, one horse can create a serious pile in no time – one horse produces about 50 pounds of manure per day, over eight tons per year. Add to that the 8 to 10 gallons of urine a horse generates in one day and the wheelbarrow or more of bedding you use each day. You can see that in no time at all you will have a virtual manure mountain!

There are other concerns for the mismanaged manure pile as well – horses allowed to graze near their own manure are quickly reinfested by larva that hatch from the worm eggs. Runoff from soggy manure piles can cause serious surface and ground water contamination problems. In King County there are ordinances that strictly control these issues. Then there are the associated odor and fly problems – if you live close to others this may concern your neighbors as well.

Composting horse manure is an excellent manure management technique, especially useful for backyard or small farm owners. Larger horse facilities or those using equipment (tractors) to manage their composting process can also develop a composting system. Design help for larger operations and additional manure management assistance is available from the King Conservation District, the USDA Natural Resources Conservation Service or King County Livestock Programs (see “For More Information” at the end). Individual consultants may also be able to help you assess your manure management options and resources.

The benefits of composting horse manure are many and include:

- reducing the possibility of parasite reinfestation in your horse – the heat generated in the composting process kills worm eggs as well as pathogens and weed seeds.
- reducing flies by eliminating their breeding ground.
- reducing odors – a properly managed compost pile should smell “earthy” and pleasant.
- reducing the volume of material you have piled up – the composting process will reduce the size of the pile by about 50% (this will take about 2 to 4 months).
- providing you with a free, easy source of compost -- a valuable soil amendment for your pastures, garden or yard. Your horseless neighbors may find it a valuable commodity as well!
- reducing the chance of manure-contaminated runoff from your property reaching surface or ground waters in your area.
- making your property more pleasing for you and your neighbors to look at and enjoy.

This handout will give you information on how to build and use a horse manure composting system that you can employ without the aid of a tractor. This system is designed for a backyard or small farm operation with 1 to 5 horses. You can tailor your composting system to meet your needs depending on how many horses you have, the amount and type of bedding material you use, and how you plan to use the finished compost. If you plan to use a tractor you will need a much sturdier design. Contact one of the resources agencies listed at the end of this handout for additional design help.

## Building A Manure Composting System

### 1. Select a site for your composter.

Look for a high, level area on your property – don’t put your composter in a low-lying area or it will turn into a soggy mess. Remember you must locate your composter far away from creeks, ditches, wetlands or other waterbodies – you can check with local authorities for specific regulations on this. Choose an area according to your zoning regulations to avoid zoning issues or problems with neighbors. A location that’s convenient to your stall and paddock areas will make the chore of cleaning up easier and less time consuming.

### 2. Decide on the number of bins you’ll need.

You will need at least two bins, maybe a third for convenience. A two-bin system works by piling manure and stall wastes in one bin. When that bin is full allow it to compost and start filling the second bin. Once the first bin is done composting you can start using the finished compost material. For convenience or if you have several horses you may want to consider going to three bins. This allows one bin for the daily stall wastes, another bin that is full and in the composting stage, and a third bin for the finished compost to be removed and used at your leisure.

### 3. Purchase materials.

A list of materials and tools needed is included at the end of this handout. It costs about \$200 per bin for materials depending on the type of wood you use and the cost in your area. Feel free to improvise and experiment by choosing materials available in your area, which will work for you and your situation.

### 4. Build the bins.

Following the design in this handout, one person can easily build this compost bin system in a weekend.

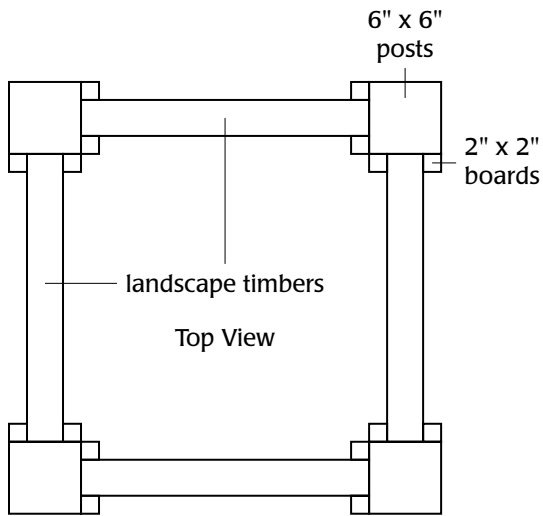
For three 4' x 8' x 8' bins, the following list of equipment and supplies are needed:

#### SUPPLIES

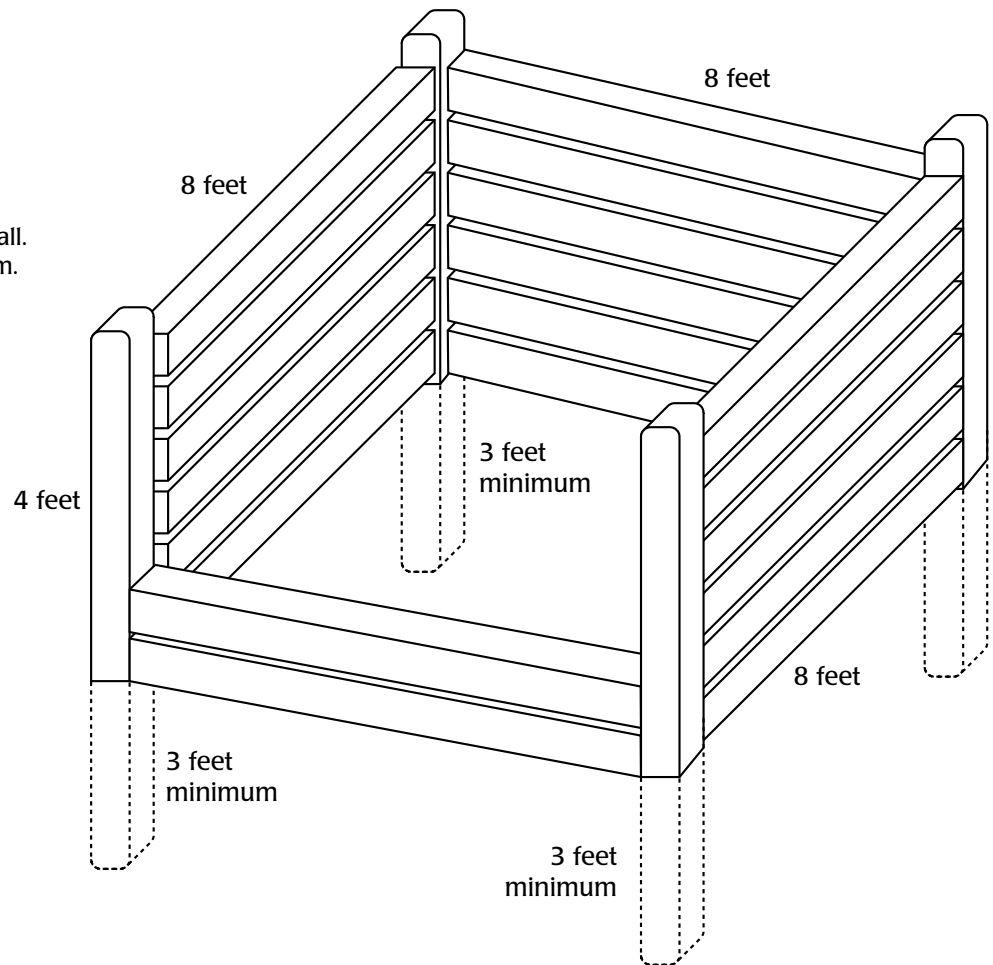
- 8 - 8' x 6" x 6" treated posts
- 40 - 4' x 2"x2" treated boards
- 110 - 8' landscape timbers (or similar wood)
- 160 - 3" deck screws
- tarp (or plastic sheet) to cover top of each bin

#### EQUIPMENT

- drill with screwdriver head & drill bit
- 25' tape measurer
- chain saw or hand saw
- carpenter's level
- post hole digger
- tamping rod or similar tool



Walls slide in place like a foaling stall.  
Repeat design for 2 or 3 bin system.



NOTE: number of landscape timbers will depend on the type and width of the timbers you purchase and how tall you wish to make your bins.

## Managing the Compost System

This includes tarping, turning and watering. Like most living things, the microorganisms that break down the manure and bedding are aerobic and require air and water. Too much or too little of each can cause problems.

### 1. Piling.

Begin by piling the daily manure and stall wastes in one bin. When that bin is full leave it and start filling the second bin. And so on for the last bin. In 2 to 4 months the first bin should be finished done composting you can start using the compost from that bin.

### 2. Cover your bins.

This can be done with a tarp, plastic sheet or a roof. A cover of some sort will prevent your piles from becoming a soggy mess in the winter and too dried out in the summer. Covering them also prevents the nutrients you're saving for the garden from being washed out into the surface water and causing other problems.

### 3. Aeration.

Turning the compost-to-be allows oxygen to get to the bacteria and organisms that break down the material into dirt-like structures. This keeps the process aerobic, an "earthy" smelling process. If the compost becomes anaerobic – without air – it will have a foul, undesirable odor. How often you turn it determines how quickly your compost will be ready. However, unless you have access to a small tractor or enjoy a good workout, turning the pile can be difficult. Air will permeate through the pile to a depth of about 2 feet. An easy way to get air to the center and avoid turning the pile as frequently is to insert a couple of 5 foot PVC pipes into the center of the pile. Use a drill to put holes along pipes. The pile will still need to be turned occasionally to get the manure on the outside into the center so the heat from the composting process can kill parasites and weeds.

### 4. Water.

Your compost material should be about as damp as a rung out sponge. In the summer water your compost with a garden hose when you turn it. An easy way to add water is just to hose down the manure in your wheelbarrow before you dump it in the pile.

### 5. Finished compost.

If you follow the guidelines above, your compost could be ready in as short as one month! However, depending how often you turn it and whether it stays damp, it will probably take between one to three months to finish, perhaps slightly longer in the winter. You will know when your compost is ready when the material looks evenly textured and crumbly like dirt and no longer like the original material.

### 6. Uses for compost.

Compost is a rich soil enhancement that improves the health of both plants and soil and helps to retain moisture. Spread compost in pastures during the growing season no more than a 1/2" layer at a time and 3 to 4" per season. It can be also added to the soil of houseplants, gardens or flowerbeds – or shared with horseless neighbors.

Check out the resources listed below and seek help if you need it. But now at least you will know that when manure happens you have a wonderful plan to make compost happen!

*Alayne Renee Blicke, a life-long equestrian, and her husband Matt Livengood live in Maple Valley, WA where they raise AQHA horses on their 10-acre demonstration farm and compete in reining events. Alayne is the creator and director of Horses for Clean Water. HCW teaches environmentally sensitive horsekeeping practices through classes, farm tours, workshops and individual site consultations. Alayne is a contributing writer for publications such as Equus. Contact HCW at 425-432-6116 by email at ARBlicke@aol.com. Visit the HCW website at <http://members.aol.com/arblicke/>*

## For More Information on Composting Horse Manure

- **Natural Resource Conservation Service** works with farmers and ranchers on issues relating to wise use of the natural resources, such as pasture, manure and mud management. You can find the number for your NRCS office listed in the phone book under federal government, US Department of Agriculture, Natural Resource Conservation Service. In King County contact the NRCS at 206-764-3410.
- **Conservation Districts** also work with farmers and livestock owners, often for smaller, non-commercial places on similar land management practices. You can 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. In King County contact the KCD at 206-764-3410.
- **Cooperative Extension** – contact your county cooperative extension office to get more information on pasture and manure management for horses, as well as composting. They can be located in the phone book under your state land-grant university (if you have trouble locating them ask for help from your public library’s reference librarian). In King County contact WSU Cooperative Extension King County at 206-205-3100.
- **Your county solid waste department** may also be able to help you with more information on composting or other ideas for manure management. Many counties (or city solid waste department) offer Master Composter classes, which although geared towards the backyard gardening-type composter, will still provide you with more information and understanding on the compost process. In King County contact KC Solid Waste Division’s Compost Hotline at 205-296-4466.
- **Other county programs** are available to assist you as a livestock owner. In King County for more information on livestock programs, zoning regulations and other manure management programs contact King County Livestock Programs, 206-296-1471. This program supports the raising and keeping of livestock in King County by overseeing the implementation of the Livestock Management Ordinance. It also promotes the education of livestock best management practices and provides cost sharing for farm plan installation.
- **Many books** are available in the library on composting. A good source for information on agricultural composting is the *On-Farm Composting Handbook*, distributed by Northeast Regional Agricultural Engineering Service, 152 Riley-Robb Hall, Cooperative Extension, Ithaca, NY, 14853-5701. Phone 607-255-7654 or FAX 607-255-4080, or Email at NRAES@cornel.edu .
- **Horses for Clean Water** – a program run and supported by horseowners promoting environmentally sensitive horsekeeping; offering classes, workshops, farm tours and individual consultations on topics such as pasture, mud and manure management; 425-432-6116, email: ARBlickle@aol.com, website: <http://members.aol.com/arblickle/>

## Troubleshooting the Compost Process

SYMPTOM	PROBLEM	SOLUTION
The compost has a bad odor.	Not enough air.	Turn the pile, add more PVC pipes.
The compost has a bad odor and is soggy.	Not enough air and/or too wet.	Mix in dry ingredients like straw or shavings, add PVC pipes and cover with a tarp.
The inside of the pile is dry.	Not enough water.	Add water when turning the pile. Should be as damp as a wrung out sponge.
The compost is damp & warm in the middle, but nowhere else.	Pile is too small.	Collect more raw material and mix it into the old ingredients. Piles smaller than 3’ square have trouble holding heat.
The pile is damp and smells fine, but is not heating up.	Too many shavings, wood chips or bedding (carbon source) and not enough manure (nitrogen source).	Mix in a nitrogen source (straight manure, fresh grass clippings, blood meal or ammonium sulfate).

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King County Department of Natural Resources Livestock Programs.*