

# Manure: A Subject You Can't Ignore

## How To Turn It Into Good Stuff

By Kris Jarvis and John Prizzi

PHOTOS COURTESY: JMSWCD



Front view of a two-bin composting system. This system is designed to accommodate the manure from three full-sized horses.

For those who pick stalls daily, it may come as little surprise that a 1000-pound horse produces approximately 50 pounds (wet weight) of manure per day or over eight tons per year. Although pasture-based horses may not generate the large manure pile stalled horses do, every horse owner will benefit from a manure management plan. Spreading (fresh) manure, composting, and off-site hauling at various stages may all be included in the plan, depending upon the number of animals and available acreage.

When manure is openly stockpiled or builds up in paddocks, it has the potential to contaminate both ground and surface water through run-off. Stockpiled manure may contain parasitic larvae, attracts flies and other pests, and takes up space that may be better suited for other uses. Managing manure as a potential resource as opposed to treating it solely as waste, can facilitate on-site nutrient cycling, improve soil quality in pastures and cut down on removal costs.

Manure contains macro-nutrients (Nitrogen, Phosphorus and Potassium) as well as a variety of micro-nutrients required for plant life. Thus, pastures, hay and crop fields, gardens and

landscaping are all potential end points. Although horse manure may not be as popular with gardeners and farmers due to perceived high weed seed content, spreading fresh material may be a viable part of a sound manure management plan.

If a horse owner has suitable equipment and adequate land base, completing a manure sample analysis and a soil test on the field that will receive the application is an important first step. Virginia Cooperative Extension (VCE) agents and Virginia Department of Conservation and Recreation (DCR) certified nutrient management planners can assist landowners in interpreting test results and selecting the best application time/season and rate.

Large equine operations as well as those without a significant land base, will likely exceed the limits of basic manure spreading. Actively composting (managing decomposition) a significant quantity of the manure may be an alternative management strategy.

Whether simply stockpiling or selecting a composting site, there are several important considerations. In general, a well-drained site, fairly flat space with surrounding vegetation that can

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act as natural filter is best. Since oxygen is a required component for composting, adequate air flow is also important.

Many localities prohibit storing manure and/or building structures within a certain distance of a property line, with 100 feet being common, so local ordinances should be checked in advance. A set-back should also be applied to any nearby well heads, streams and ponds. In addition, convenience to a water hydrant should be considered.

When creating a pad for composting bins, compacted sod or soil is recommended to avoid issues related to excessive run-off and drainage. In instances where soil type poses a risk to proper composting, a hardened pad may be needed to limit runoff and facilitate mixing.

When devising a bin system, first determine how many animals will be contributing to the composters and add bins accordingly. The Northeast Recycling Council, Inc. suggests a two-bin system for one to three 1000-pound animals and a three-bin system for up to five animals. Horse operations with three bins, typically fill one at a time, so each is at a different stage of decomposition. Material that is ready to be applied to pastures is not covered with fresh manure.

Frequently, bins are constructed as 8' x 8' x 3' squares with corner posts installed a minimum of three feet below ground. Composting bins are typically built from wood, but other materials, such as concrete, can be used. It is recommended that building materials be rot-resistant, but not treated with chemicals or pesticides.

Residents located in the Upper Goose Creek Watershed in Northern Fauquier County are encouraged to contact to the John Marshall Soil and Water Conservation District for technical assistance and potential funding opportunities for equine manure composting units.

Composting requires a proper mixture of materials, airflow, moisture content, and upkeep to facilitate the process of material breakdown from microbe activity. These components also help to kill pathogens, weeds, and chemicals while retaining



**Composting bins don't require a roof but having one helps maintain the proper temperature of the compost by keeping the material warmer in the winter. It also allows the property owner to control the amount of moisture.**

beneficial nutrients. Horse manure typically meets the ideal Carbon to Nitrogen ratio of 25:1-30:1 however the addition of bedding material can sometimes bring this C:N ratio to 40:1 or higher. If wood shavings or other high carbon content bedding is used, additional nitrogen sources such as grass clippings may need to be added to the compost to bring it in balance.

To allow for proper airflow, it is recommended that the compost pile be turned weekly either by hand or mechanically. As an alternative, perforated pipe can be inserted into the active compost pile to provide necessary airflow (See Virginia Cooperative Extension's Manure Management publications, 2009). Using of a composting thermometer to monitor internal temperatures is suggested, with 160 degrees F being the target to kill pathogens, weeds, and other unwanted components in the compost. To maintain these temperatures, the compost bins should be covered in colder weather.

A variety of manure composting resources are available on-line and from local offices of Virginia Cooperative Extension, USDA Natural Resources Conservation Service and regional solid waste authorities.

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