CITY OF RANCHO PALOS VERDES

HORSE MANURE COMPOSTING GUIDELINES

REVIEWED BY THE EQUESTRIAN COMMITTEE ON JUNE 10, 2004
ADOPTED BY THE CITY COUNCIL ON JULY 20, 2004

Manure Composting Guidelines

The City of Rancho Palos Verdes Municipal Code Section 17.46.060(B)(1) states, "*Each property owner or lessee is responsible for the continuous maintenance of sanitary conditions, including, but not limited to, the cleaning of corrals, stables, barns and other areas to which animals have access; and the proper disposal of manure, offal, soiled straw and other refuse. Animal waste shall not be allowed to accumulate, runoff or leach so as to create a nuisance or be offensive to other persons in the vicinity. Manure may be disposed of by removal from the lot or parcel by a city-licensed waste disposal company, or by composting. If waste or manure is to be composted, the composting material shall be kept in a composting bin, and the composting shall be performed in accordance with city approved composting procedures. Proper procedures must be used to control insects and to minimize offensive odors.*"

All of the city-licensed waste disposal companies have provisions to dispose of manure. In order to determine the cost of disposal, please contact your waste disposal company. Should you determine to compost manure, the City of Rancho Palos Verdes has established the following guidelines. You should be advised that due to the amount of manure that a horse creates (average is 16.5 lbs per 1,000 lbs live animal weight per day) a combination of hauling and composting may be necessary.

Benefits of Composting

Horse manure is one of the finest materials that can be composted. It contains large amounts of both nitrogen and beneficial microbes. By complying with the optimum conditions of **heat**, **moisture**, **air** and **materials**, you can speed up the composting process.

Although manure can decompose on its own, composting is a method of speeding up this natural process. The breakdown of manure and bedding occurs much more rapidly in the compost pile because the environment can be made ideal for microbes to do their work. The end result

of composting is a dark, crumbly, earth-smelling product similar to potting soil or humus.

Composting is of particular interest to horse owners because, if done properly, composting kills parasites, eggs, and larvae, and destroys weed seeds in horse waste, and can decrease the size or volume of the pile by 50%.

Location, Location, Location

Municipal Code Section 17.46.060 requires that all composting material be kept in a bin. Furthermore, the Municipal Code does not permit the spreading of raw manure. When choosing a location for your compost bin, the following standards shall be complied with:

1. Composting of horse manure shall only be allowed on lots or parcels or contiguous lots or parcels where horse keeping is being done.

2. The compost bin shall not be located closer than thirty-five feet to (a) any structure used for human habitation, or (b) any required building setback line, on an adjacent property owned or controlled by a different person than the person owning or controlling the property where the animals are located.

3. The compost bins shall be screened from view from the public right of way and adjoining properties. Prior to determining what screening to use (plants, wall, etc.) please contact the Planning Department at (310) 544-5228 to determine any potential restrictions.

4. The compost bins should be located in a fairly level area of the lot. In no case shall the compost bins be located on an extreme slope (35% or greater).

5. Composting bins shall not be located in low-lying areas where water may accumulate. Pooled water, especially around manure and compost, will cause odor and fly problems and will increase the risk of run-off to contaminate water sources. Additionally, Municipal Code Section 17.46.060 prohibits animal

waste, manure, offal, soiled straw and other refuse to be located within any regular, intermittent or seasonal watercourse. For additional information, please refer to the City of Rancho Palos Verdes' Stormwater Best Management Practices for Horse Owners and Equine Industry pamphlet.

6. Locate the bin where water can be accessed if necessary. Water may be needed to maintain the appropriate moisture content of the compost material.

7. Be considerate of your neighbors. A properly managed compost bin will **NOT** have a foul odor or attract flies. Nonetheless, try to locate your bins out of view and down-wind from neighbors.

8. Allow room to maneuver the necessary equipment to build and turn the compost material.

Building Your Compost Bin

Composting does demand some time and attention. Management of the compost material can be kept simple or be quite sophisticated and should be customized to fit your specific situation and goals. The compost bin should be constructed out of a sturdy material and shall be insect resistant and seepage free. Instead of constructing your own bin, you may choose to use a pre-manufactured, commercially available bin.

A minimum pile size (to be kept within the bin) of 3.5' x 3.5' x 3.5' is needed to achieve proper composting temperature. A 5' x 5' x 5' compost bin, which is the minimum size, is sufficient for two horses. This size bin would hold approximately 16 wheelbarrow loads of manure/ bedding. The bin size can vary and should be dictated by your system and available space.


A three-bin system

For properties over five acres in size a three-bin system may be used. The advantage of a three-bin system is that it allows the contents of one bin to be turned into another bin.

Materials for Your Compost Bin

Materials for your compost pile (to be kept within bin) can include: horse manure or manure with bedding, grass clippings, grass hay, straw, wood chips and sawdust.

Keeping the Nutrients Balanced

Material	C:N Ratio
Horse manure	20-40:1
Grass clippings	25:1
Horse manure with bedding	30-60:1
Grass hay	30-40:1
Straw	40-100:1
Paper	150-200:1
Wood chips, sawdust	200-500:1

Carbon to Nitrogen Ratios

Nitrogen is the main nutrient found in manure; carbon is the main element found in bedding material. The challenge is to ensure proper proportions of carbon and nitrogen. A ratio of about **30:1** is ideal for composting. See table of carbon to nitrogen ratios.

Monitoring the temperature of the material

Temperatures should be kept between 120° and 155°

You should monitor the temperature of the pile weekly to ensure active composting is taking place. You may purchase a compost thermometer at garden supply stores. The center of a properly made heap should reach 120° - 155° **Fahrenheit** within a week during the summer. In cooler seasons, it may take a little longer.

To destroy parasite and weed seeds, the above-mentioned temperatures should be maintained for at least 21 days. Piles that are too cool (below 120°) break down more slowly and do not kill parasites or weed seeds. Piles that are too hot (above 155°) kill the composting microorganisms and result in a foul-smelling pile.

Turning and mixing the material

The most active site of composting takes place in the hotter center of the pile. Therefore, the pile needs to be turned and mixed to expose the material from the cooler, outer edge to the hot center. Turning not only helps aerate the pile, but also ensures that weed seeds, and parasites in the cooler sections are destroyed by bringing them into the center to "cook."

Adding Water to the material

All materials in the bin must be moist, but not soaking wet. The moisture level can be gauged by squeezing a handful of compost. Compost that contains an adequate amount of moisture will feel like a freshly wrung out sponge. If water runs out of the pile or if you can squeeze water from a handful of compost, it is too wet. In this case, you will need to add straw, tree leaves, shredded bark or old hay to dry out the pile. If the compost does not feel moist, you need to add water.

One of the biggest mistakes people make is putting a lot of water on the pile at one time. Adding a little water each day is much better than letting the pile get dusty and dry, than trying to re-wet it back to the 50% range. Consider watering your compost with a garden hose when you turn your pile. Or, an easy way to add water is just to hose down the manure in your wheelbarrow before you dump it in the pile.

The actual amount of water needed will vary substantially depending on the kind and amount of bedding used and the weather. The drier the bedding included in the mixture, or the warmer and dryer the weather is, the more likely you will need to add water.

Finished Compost

When manure and bedding are completely degraded, they are termed "finished" compost. Finished compost will not heat up anymore and has an earthy smell and a crumbly soil-like texture. On average, a well-managed pile can be composted in 2-4 months. However, there shall be no accumulation of unspread finished compost allowed on the property at any time.

Enjoy the Many Benefits of Composting!

The selling of compost is prohibited. However, the property owner may enjoy the compost in any of the following manners.

As a Soil Amendment

Although compost contains nutrients, its greatest benefit is in improving soil characteristics. Composted horse manure can be used to increase the organic matter content and the water and nutrient-holding capacity of sandy and heavy-clay soils.

As a Growth Media

Finished compost can be used by plant nurseries as potting soil and is an excellent media for the production of mushrooms and fish worms.

As Mulch

Compost can be a valuable mulching material for gardens and landscape plants. And, if used as mulch, the compost need not be completely finished.

Troubleshooting

Symptom	Cause	Solution
Compost will not get hot	Pile may be too dry	Add water
	Pile may contain too much bedding (carbon)	Add fertilizer or manure to supply more nitrogen
	Pile may be too wet	Add more bulking materials, cover from rain
	Pile may be too small	Building bigger pile
	Cold weather	Build bigger pile
Compost has foul smell	Pile may be too wet	Add more bulking materials and turn pile
	Pile may need more air	Turn the pile more often
	Pile may contain dead animal	Remove the carcass
Compost does not break down	Pile may be too dry	Add water
	Pile may be too small and is not getting hot enough	Build a bigger pile
	Pile might not contain enough nitrogen	Add fertilizer or manure to supply more nitrogen

(Table adopted from Caring for Alberta's Rural Landscape: Manure and Pasture Management for Horse Owners)

Sources

1. Caring for Alberta's Rural Landscape: Manure and Pasture Management for Horse Owners. Agriculture, Food & Rural Management. Alberta, Canada: January 2004.

2. The Horse Owner's Guide to Composting. Otter Creek National Resources Conservation Distribution.

3. www.compostguide.com

4. Composting Manure and Other Organic Residues. (http://ianrpubs.unl.edu/wastemgt/g1315.htm). University of Nebraska website