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FACT SHEET

Department of Animal Science, University of Connecticut

Effective Horse Management - First in the Best Practices Series

How to Properly Manage Manure

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Have you looked in your yard lately and thought, "What am I going to do with this pile of manure?" Properly managing your manure will reduce flies and dust and prevent pollution to nearby water bodies. Important factors to consider when managing manure follow:

Closeness of storage site to water and neighbors are important aspects of manure management. Manure should be stored away from places where runoff may enter streams or flooding may sweep away manure. Manure should be placed:

- more than 200 feet from surface water and private wells
- at least 500 feet from public wells
- away from property lines (this depends on your local planning and zoning commission but must be at least 50 ft or more away from property lines in some states)
- away from a residence

Size of storage is another important aspect of manure management. On the average, a horse produces 40-50 lbs of manure/day, 7-9 tons/year! In order to calculate the amount of storage you will need, measure the average daily waste (manure and bedding) and multiply that amount by the number of days between planned removal for

disposal or utilization. For example, for the average 1000 lb horse, you will need 12 yards of storage space. One cubic yard is equal to 27 cubic feet, so you will need 324 feet or an area roughly 9 feet long by 9 feet wide by 4 feet deep. Remember that if spreading on fields, the time frame may need to be extended if the fields are frozen (not recommended to spread at that time) or inaccessible to equipment due to heavy rains. Also remember when designing the space to consider what sort of equipment you will be maneuvering to access the manure. Some storage options to consider are:

- covered dumpster
- 3 walled structure with roof or tarp cover
- 3 bin compost system with cover
- covered or enclosed truck bed or manure spreader
- concrete pad with one or two walls (walls will make removing manure easier)
- for small facilities, trash cans with lids

Water management is also an important aspect of manure management. Roof gutters and diversions keep clean water from entering the barnyard or manure pile. A cover or tarp should be used to keep rainwater out of storage. Using a concrete pad on the bottom of the pile will help protect groundwater and make manure disposal easier.

Composting is a way to handle manure that should be considered. Composting will increase the value of manure, kill parasites and weed seeds, and decrease the volume of waste. Compost piles should be located away from buildings since they may spontaneously combust. Piles must be turned either on a weekly basis or based on the internal temperature of the pile. Passively aerated piles are not turned but have perforated pipes placed in the pile. Internal temperatures of compost should reach about 140° F. A minimum pile size of 4 feet by 4 feet by 4 feet is needed to achieve composting temperatures. A 3 bin system can be used on smaller farms or windrows (long, free-standing piles) can be used on larger farms.

Some guidelines for composting are:

- Piles should be turned when temperatures fall below 110° F or above 140° F
- Base width of the pile should be twice its height
- Moisture content should be that of a wrung out sponge (30-40% dry matter)
- The ideal carbon:nitrogen ratio is 20:1 to 40:1 (horse manure with no bedding is 25:1, rice straw is 79:1 and oat straw is 48:1, wood products are 500:1, so more frequent turning may be needed or nitrogen may need to be added in the form of urea or manure if bedding is included in the mix)
- Finished compost will have a soil-like texture and smell earthy
- The process can take as little as 3 months with frequent turning

Spreading is a common way to handle manure. Some things to keep in mind:

- Nutrients in manure and availability to plants

In general, manure contains 21% solids, 110 lb/yr Nitrogen, 59 lb/yr phosphate and 110 lb/yr potash. The amount of nitrogen available is a result of the chemical composition of the manure, manure application, and management. Available nitrogen ranges from 35% if spread and left on

the surface of the soil to 60% if spread and worked into the soil within a day. Available phosphorus ranges from 80% from phosphate and 90% from potash.

- Time of year –It is ideal to spread manure in the spring so that you minimize potential losses before the crop can take it up and nutrients are supplied for the upcoming growing season. Spreading in the fall is also a good idea. Manure should not be spread in the winter since the ground may be frozen and may be washed away by rain or melting snow.

- Pasture vs. crop fields

Pasture - Parasite eggs or weed seeds can cause a problem if applied to pastures. If applied too thickly, grasses may be smothered.

Crops – As bedding materials are broken down by microorganisms, nitrogen depletion of the soil may occur. Nitrogen fertilizer may need to be added to prevent this. Soil should be tested to determine crop needs and manure applied should not exceed the crop needs. Manure can be collected and packaged to send to a soil testing laboratory for analysis at the land grant university's soil testing lab. A standard N-P-K (nitrogen, phosphorus, potassium) value can be determined in order to decide how many acres the manure should be spread on.

- Methods of spreading

Manure can be spread with a tractor and spreader for ease of spreading. Other methods can be employed but may be more labor intensive. You might consider purchasing equipment with a friend or group of friends if it is cost prohibitive for your budget. Compost can be spread as ½ to 1 inch thick and then mixed well into the soil.

Disposal is another consideration for manure management. There are several options for disposal:

- Rent a dumpster from a sanitation company and have it removed on a regular basis.
- Have a local farmer or landscaper remove manure or bring manure to him/her on a regular basis. A hydraulic dump trailer can make delivery easier.
- Give manure to family, friends, and neighbors for use in gardens or landscaping.
- Use manure or compost on crops and hay fields. If using uncomposted waste, remember that nitrogen depletion of the soil may occur as bedding materials are broken down.

If you need help with these matters, you can contact your county cooperative extension office or local branch of the National Resources Conservation Service. The best time to consider manure management is before you even have horses on your property. However, there's no time like the present to reevaluate what you are doing and determine if you can manage your manure more effectively. It will make your neighbors, you, and your horse healthier and happier to have effective manure management.

Sources and Suggested Reading:

Connecticut Horse Environmental Awareness Program. Available online at

http://www.ct.nrcs.usda.gov/programs/rc&d/km_heap-program.html

The Carbon/Nitrogen Ratio. Humanure Handbook. Available online at

http://www.weblife.org/humanure/chapter3_7.html

Manure and Pasture Management for Recreational Horse Owners. Spreading Manure on a Few Acres. Available online at

<http://www.extension.umn.edu/distribution/naturalresources.components/7540.03.html>

Manure and Pasture Management for Recreational Horse Owners. Managing Manure by Composting. Available online at

<http://www.extension.umn.edu/distribution/naturalresources.components/7540.04.html>

Manure and Pasture Management for Recreational Horse Owners. Making Better Use of Your Horse Pasture. Available online at

<http://www.extension.umn.edu/distribution/naturalresources.components/7540.04.html>

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