

## Protecting Water Quality on your Horse Farm: Composting Manure

Horses generate a large amount of manure and stall bedding waste that needs management. Often this gets dumped and left to accumulate in “the pile out back.” Unmanaged manure piles can impact horse health by serving as a breeding ground for flies and other parasites. Runoff from the piles is also full of nutrients, bacteria and possibly chemicals which can contaminate nearby streams, rivers and groundwater. In the Falls Lake watershed, excess nutrients are negatively affecting water quality.

	Manure Produced*	Nitrogen Produced	Phosphorus Produced	Potassium Produced
One 1,000 lb horse	9 tons/yr	99 lbs/yr	18 lbs/yr	72 lbs/yr

\*Includes manure and urine; does not include bedding

Sources: Rutgers Equine Science Center (1 ton of manure contains 11 lbs N, 2 lbs P, 8 lbs K); NC Equine Industry Study (May, 2009)

Composting is a cost-effective, win-win solution to the manure problem. This is the process by which manure and stall waste is broken down by microbes into a product that can be safely used as fertilizer on your pasture and garden. Composting reduces the soluble nitrogen (reducing unwanted runoff into surface water) and kills parasites and weed seeds. Follow these steps to create great compost:

1. **Build a manure storage area.** Estimate the amount of manure your horses generate and create a multi-bin storage area, with at least 3 bins each sized to handle 30 days of manure /stall waste (one horse generates 0.8 cubic feet of manure per day, round to 1.0 cubic feet or more to include bedding). Ideally your storage area should have a concrete floor and cover/roof to prevent runoff. Locate it a convenient distance from the barn, and at least 100 feet away from streams, ponds and wells.
2. **Pick up manure.** Collect manure from stalls and paddocks and dump it in the first bin or bay. Once it's full, fill the second, then the third, etc (the first pile should be done composting by the time you fill up the last bin/bay, and the cycle starts again). Make sure you are picking stalls carefully so that little bedding material makes it to the compost pile, as too much shavings/straw can slow the process.
3. **Provide air.** Microbes need air (oxygen) to work. Turn the pile about once a week, or at least once every other week, with a shovel or tractor/front end loader. In place of manual turning, PVC piping with drilled holes can be placed throughout your bin/bay to help air flow through the pile. A forced-air system will also work well.
4. **Keep it moist.** Microbes also need water to work. Add water as needed to keep your pile moist. It should not be soaking wet or completely dry, but somewhere in between, having the feeling of a damp sponge.
5. **Check the temperature.** Buy a long thermometer from your farm supply store and check the temperature of the pile every week or so. The interior of the pile should range from 130° F and 160°F to kill seeds and parasites.

6. **Remove and use your finished compost!** After the compost temperature has reached the ideal temperature range for several weeks, and fails to re-heat after turning and moisture addition, the compost is considered finished. The pile should be fairly uniform and earthy-smelling. It is now ready to be applied to your pastures or gardens as fertilizer. The process can take as little as 6-8 weeks if managed well. Test your pasture soil every 2 to 3 years to make sure you're not over-fertilizing, especially if you have a small area to apply.

Horse farms throughout North Carolina are composting their manure to create high quality fertilizer and protect water quality. Contact your local Soil and Water Conservation District <http://www.ncagr.gov/SWC/findyourdistrict.html> or County Agricultural Extension <http://www.ces.ncsu.edu/local-county-center/> for more information, recommendations and possible financial assistance.

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