



Manure Management in the Equine Landscape

A 1000 pound horse will produce at least 9 tons of manure each year. Add this to an additional 4 tons of bedding material from the stall, and the result is a huge 13 tons of waste to deal with. How to manage this massive amount of manure is an issue for every horse property owner. The goal is to develop an ideal manure management system that benefits the environment, the general aesthetics of your farm, and your horses' health. The three aspects of manure management that need to be considered when developing a system are the **COLLECTION**, **STORAGE** and **DISPOSAL** of the manure.



- 1. COLLECTION:** Have a regular and convenient system for the collection of manure from pastures and stalls. This prevents parasites re-infestation in horses and bacteria-harboring mud in the stalls. It is recommended to clean out manure from stalls once a day and pastures at least once a week..
- 2. STORAGE:** An effective storage system is needed to minimize mud and odours and also to prevent water pollution. There are many different systems for manure storage, including the creation of a compost pile which has many benefits.
- 3. DISPOSAL:** Nutrient rich compost can then be disposed of on the pastures, thereby turning the manure into an asset for your property. There are also other disposal systems which can turn manure into a benefit as opposed to an expensive hassle, mud pit, eyesore, and odour problem.

The 3 most important steps to Beneficial Manure Management are:

- 1. How to deal with Manure in Stalls?**
- 2. Where to Store the Manure?**
- 3. How to Dispose of the Manure?**

1. How Should I Manage my Stalls?

For the health and well-being of your animals and your property, it is essential to manage your horses' stalls and paddocks properly. If not cared for appropriately, the paddocks can become mud pits and fly magnets, resulting in the decreased comfort of your horses. Often the question that horse farm owners struggle with is what type of bedding material to use in their stalls. There are many factors to consider as you make this important decision. Hopefully these tips will be beneficial to you in determining how to manage your stalls:

- Reduce waste by placing rubber mats in the stalls. The mats also help to keep the stalls clean and the decreased bedding use decreases dust which can harm your horses.
- Clean out the stalls and paddocks on a regular basis. Once a day for stalls and once a week for paddocks. This will help to prevent eggs from hatching as some species of worm eggs can hatch as often as every 3 days. It will also prevent the formation of mud.
- Use only enough bedding to soak up the urine and moisture in the stalls. Any more will be wasteful, expensive, make the manure less useful to spread on your pastures, and will greatly increase the time needed for it to compost.
- Select bedding that is absorbent, non-toxic, dust-free, comfortable, disposable, unpalatable, and affordable.
- Store bedding in a well-ventilated area prior to use so it will remain as dry as possible.
- Refrain from using wood chips or shavings for bedding if you are considering either composting your manure or spreading it raw as fertilizer. The use of wood chips or shavings as bedding will reduce the nitrogen content of the manure/compost.

2. Where Should I Store the Manure?

If done incorrectly, there can be severe environmental and health impacts from manure that is not being properly stored. These impacts include pollution into waterways from the runoff of pathogens and nutrients, odour problems, aesthetically unpleasant areas, mud, and diseases to your animals. There are a variety of successful methods of manure storage options including a 3-sided, roofed structure, a concrete pad with either walls or buffer strips, and a simple concrete pad. The following information provides further details on manure storage and management options.



Did you know?
Constructing the storage into the side of a hill below the barn will make it easier to dump wheelbarrows of manure.

1. Getting the Manure Taken Away by a Manure Broker.

The cost of removing the manure is based on how difficult it is to remove, how many trips are needed and who is willing to take and use the manure. To reduce these costs, build a covered storage container to hold the manure until the manure broker comes. A storage container will:

- Reduce water pollution by minimizing the runoff of nutrients and pathogens into the water.
- Decrease your cost of manure removal by making your manure more dense, thereby decreasing the volume that needs to be taken away.
- Increase the profitability of the manure, as keeping it in storage helps retain nutrients, making it more appealing for use on crops.
- Increase the ease of manure removal, especially in rainy weather.
- Reduce the unpleasant odours on your property.
- Lessen the amount of insects hatching and infesting your horses.



2. Storing the Manure to use as Raw Fertilizer:

- Locate your storage in a high, dry and level area to reduce mud, runoff, and hassle.
- Choose the location of your storage so that it is downwind of any residences and in a visually remote location.
- Locate your storage piles on slightly sloping land (0.5%-3%) to allow for the runoff to be managed.
- Cover your manure pile to keep nutrients from being washed away into nearby waterways.
- Plant a buffer strip of vegetation down slope from your manure to filter out nutrients.
- Build your storage area with walls to reduce runoff from the sloped sides of the piles, give you something to push against with a loader, retain heat to promote composting and increase the speed of clean out.
- Reinforced concrete is the best material for the storage area as it is durable enough to withstand all types of weather. Concrete can also withstand pressure from equipment in addition to reducing runoff from the manure.
- Create a permanently vegetated flow path to treat runoff from the storage. The flow path must be located at least 3m from field tile drains, 15m from drilled wells and 100m from municipal wells.

3. Composting the Manure:

Composting can be a great option as it can be a means by which to turn manure from a liability into an asset for your property or a profit for you. Try composting if you would like to:

- Reduce flies by removing their breeding ground and killing the parasite eggs.
- Reduce odours.
- Add organic matter to the soil which will benefit soil structure, moisture retention, and aeration as well as add nutrients.
- Kill worm eggs, weed seeds, and disease-bearing pathogens.
- Reduce the volume of manure, as composting can cut the pile down by 50%!
- Provide you with valuable soil fertilizer to use on your property, or to sell for profit.

Interested in Composting?

Here are some simple Best Management Practices to create healthy compost that will benefit your property, your horses, and the environment:

- Use less bedding in the stalls in order to speed up the composting rate of your manure.
- Store the compost in sheds (3-sided bins) side-by-side, and when the piles are 5 feet high, turn the contents into the next bin.
- Get your nutrient levels tested and aim for a Carbon Nitrogen (C/N) ratio of 30:1. If it is too high, add wastes such as grass clippings to lower it.
- Test your water moisture level daily. It should be as moist as a rung-out sponge, damp but not dripping. Moisture content should be approximately 55-65%.
- Direct the runoff from the compost to a runoff catchment area and then reuse it by adding it to the compost pile when water is needed.
- Cover your compost pile with a tarp, roof, or plastic sheet so that you can monitor the moisture levels and to reduce runoff of nutrients and pathogens.
- Aim for the oxygen levels in the pile to be just above 5-10%.
- Add oxygen to the piles by inserting 5-foot PVC pipes into the middle the pile, so they look like chimneys. Then poke some holes into the pipes, approximately a half inch in diameter at 6-inch intervals.
- Keep your compost pile at temperatures between 130-150 degrees Fahrenheit as the pathogens that thrive at high temperatures will be destroyed above 130 degrees.
- Test the temperature daily by inserting a temperature probe into the centre of the manure pile at various locations.

Did you know?
If your compost pile is higher than 2 metres, you are running the risk of spontaneous combustion occurring.

3. How Should I Dispose of the Manure?

Choosing a disposal plan that is economical and efficient can often be difficult for farmers. There are three ways in which to successfully dispose of the manure or compost from your property. You can have it picked up by a manure broker, sell it for profit if it is compost, or use it on your property as fertilizer if you have enough of a need for nutrients. The general rule is that if you have 1-2 acres of land per horse, then the compost can be spread onto the farm. Here are some guidelines for using the manure as fertilizer for your property:

- Realize the compost is ready when it smells earthy, is crumbly, and looks dark and evenly textured.
- Apply the compost to the soil as mulch or on pastures after 3 months. For any other use, it needs to compost for 6-9 months.
- Wait longer to apply if woodchips are being composted. They will take 9-12 months if they are turned frequently and closer to 2 years if they are just stacked..
- Apply the manure produced by your horses onto pastures in order to save you \$150 in fertilizers a year per horse!
- Spread the compost on the pastures early in the season when the soils are dry and there is no rain in the forecast.
- Put only enough compost on your field for the crops to grow. Excess manure can cause runoff, causing water pollution of nutrients and disease-causing pathogens and parasites.
- Plant buffer strips of trees and shrubs along waterways to filter out pollutants in case they cause runoff of the manure you're putting on your field.
- Apply the stall waste from 3-4 horses per one acre of productive pasture.



For More Information...

The Centre for Land and Water Stewardship.

Website: <http://www.uoguelph.ca/~claws/newsite/index.html>

Equine Guelph:

Website: www.equineguelph.ca

Conservation Authorities:

Provide programs and monetary aid to landowners that plan to protect natural resources. They offer grants to help landowners protect natural resources and improve the health and productivity of their lands.

Website: <http://conservation-ontario.on.ca/find/index.html>

Ontario Ministry of Agriculture, Food & Rural Affairs (OMAFRA):

Offers numerous fact sheets regarding best management practices for farms and how to protect and improve our natural resources. On their website they have a section of fact sheets dedicated to just horse farms.

Websites: - http://www.omafra.gov.on.ca/english/environment/bmp_books.htm
- <http://www.omafra.gov.on.ca/english/livestock/index.html#horses>

Ministry of Natural Resources (MNR):

Offers programs such as the Conservation Land Tax Incentive Program (CLTIP) and the Managed Forest Tax Incentive Program (MFTIP) that provide monetary aid to landowners.

Website: http://www.mnr.gov.on.ca/en/STEL02_168319.html

Stewardship Councils:

Website: <http://www.ontariostewardship.org/ontarioStewardship/home/osIndex.asp>

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