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Composting Horse Manure

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Horses that live in stalls or paddock can create a heap of unwanted manure very fast. It is very important to keep stalls and runs clean. By cleaning horse stalls every day not only does it keep the stalls and pens looking good, it helps control flies, parasites, and potential disease. One horse on average generates over 5 cubic feet (about 350 pounds) of manure per week! The question becomes what to do with all that manure?

Manure takes up space in landfills, can pollute our groundwater, attracts flies, harbors parasites and deadly bacteria, and can cause the spread of diseases. When manure is sent to a landfill, not only does it take up a lot of space, it can take years to break down. Manure is sometimes dumped near streams and rivers, polluting the water. Arroyos are also used for dumping manure. When it rains, manure in the arroyo runs into rivers and lakes polluting the water. It can even get into the human water supply.

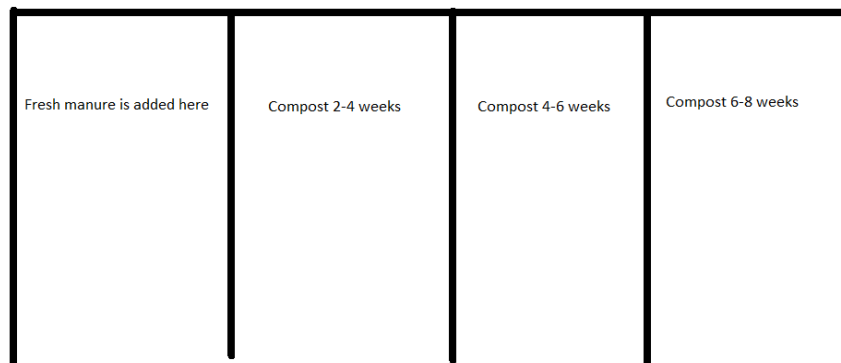
Composting is a great solution. By composting, the volume of manure can be cut by as much as 65 percent, and the end product has many useful applications. Manure can be converted from unwanted waste to valuable compost in as little as 8 weeks. The compost can then be used for gardening, landscaping and a variety of other uses. There are a lot of methods for composting manure, and other organic waste. It does not matter what part of the country you live in, there is a way to compost. Most methods do not take up much space at all, but if you have a large number of horses, being able to set aside a large area for composting can be cheaper.

To compost manure and bedding properly you need the right combination of water, nitrogen, and oxygen. It's easy to know when the compost pile is working just right because the internal temperature in the pile should be 140F to 160F. When the compost pile is 140F to 160F it is hot enough to kill insect larva, fly eggs, parasites, bacteria, weed seeds, and the bad smell that most people think of when you say "manure." It is very

important to keep compost piles in the 140F to 160F for at least the first 2- 4 weeks of decomposition. If the temperature is too low it will not kill off the bad contaminants, and the pile will take longer to decompose. If the temperature is too high, the good microbes that digest the organic material will start to die off. When it's too hot or not mixed properly, bedding and hay in the compost can become a fire risk.

When composting manure from more than 20 horses, composting methods that utilize large piles, or dynamic windrows ("Composting Horse Manure in Dynamic Windrows" can be found at www.ext.colostate.edu), should work best. When composting manure, for a small or large number of horses, www.o2compost.com , is a good website. I like the methods used by o2compost.com, but their way still takes too long to break down organic material, and does not always evenly heat the pile allowing insects to procreate in the outer layer. Overall I think composting in bins is a good way to go. The bins I'm talking about have three solid sides and can be any size.

Large cement bins work well when composting waste from a large number of horses. Smaller bins work well for a small number of horses. Small bins can be made out of wood, or cement depending on what is needed. The idea is to add manure to the first bin and when it's full (or every two weeks) move it to the next bin, and so on. By moving the piles periodically the pile is oxygenated, in addition the wet bottom and dry top layer are mixed, so the compost breaks down evenly. Moving/ mixing the piles helps kill insect larva, and weed seeds, more consistently then just letting the pile sit in one place.





Large covered compost bins are great, but expensive. More information can be found at www.o2compost.com.



This type of bin is cheaper and easier to build. If you live in a place where there is a lot of rain and snow a covered bin will work better. A tarp can also be used depending on what will work best for where you live. More information can be found at www.o2compost.com.

Our Composting Method

We compost our manure in large piles. Each pile contains about 2 weeks' worth of manure per pile. The advantage of a large pile is that it maintains moisture, and heat levels. The disadvantage of piles is that the outer layer of the pile becomes too dry and does not decompose as fast, and the bottom of the pile gets packed down causing a lack of oxygen. This is why we have 5 places where we pile the manure/compost. The first pile is where the fresh manure and bedding is added every day. The second pile is 0 to 2 weeks old. The third pile is 2 to 4 weeks old. The fourth pile is 4 to 6 weeks old. The fifth pile is 6 to 8 weeks old. After 8 weeks the compost is processed and ready to be used. Every two weeks each pile is moved from one spot to another (we use a tractor for this because the piles are too big to move by hand). In moving the piles, the dry outer layer mixes with the wet bottom layer, and the pile is oxygenated. This method takes up a lot of space, but it is cheaper than building large bins.

Water is added to the piles as needed. Because our compost piles are outside and not covered, the weather is a factor. The right moisture content is very important. If the pile is too dry it won't decompose and can become a fire risk. If the pile is too wet the compost will smell very bad. Here is a simple way to gauge the moisture content of the pile. It should feel moist to the touch, but water should not run out of your hand when you squeeze it. The best way to know if the compost pile is just right is by checking the temperature. The first pile (where fresh manure is added every day) needs to have water added every two or three days. The older compost piles only need to have water added every two weeks when the piles are moved.

Nitrogen is important for proper decomposition. It can be difficult to know if nitrogen needs to be added for proper decomposition of the compost. Most of the time we do not need to add nitrogen because the pile is more than 50% manure, and less than 50% wood shavings, hay, and straw. If the compost pile is more than 50% manure there should be no need to add nitrogen. For example there are times when we add large amounts of hay or wood shavings when we cleaning out the hay barn or when stripping stalls. In this case there is little or no manure to provide the nitrogen necessary to decompose the organic material. We add nitrogen fertilizer to the organic material. Other sources of nitrogen are alfalfa, ammonium nitrate, blood meal, and urea. Detailed information on percentages of carbon to nitrogen ratios can be found in "Composting Horse Manure in Dynamic Windrows" at www.ext.colostate.edu. Monitoring the temperature is the best way to know if the compost pile is just right. If the temperature is too low check the moisture, and turn the pile to add oxygen. If that does not bring the temperature up a nitrogen source can be added to bring up the temperature. After 3 or 4 weeks of decomposition, the nitrogen will be used up and the temperature will drop.

This is normal. If you want the pile to remain at a higher temperature for a longer period of time, adding nitrogen can help.

Getting a composting program started requires time and money. Research the type of composting program that's right for you. Set aside a good place for composting. When everything is working the way it should there will be little if any smell. The size of the piles will shrink in a matter of weeks taking up less space. Once composted, it can safely sit in large piles until needed, without a combustion risk.

We have been composting for a few years now. In that time we have used all the compost that we have produced. We use compost for improving footing in horse runs, turnout, arenas, and it is great for gardening and landscaping. My only regret is that we did not do this sooner.



We use a digital oven thermometer with a 4 ½" probe to check the temperature.



This is the first pile where manure is added every day.



This is the second pile 0 to 2 weeks old.



The pile farthest away is 2 to 4 weeks old. The middle pile is 4 to 6 weeks old. The closest pile is 6 to 8 weeks old. After 8 weeks the compost is ready to be used but it can safely remain in a large pile until it is needed.

These are some of the great results:

