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Manure Management for Fairs and Exhibitions- Hauling, Spreading, and Composting

Whether you are moving manure directly to a storage facility, transferring manure to a field for temporary stockpile, composting or applying manure, details matter.

#3 in a series of four fact sheets for fairs and expos

On-site vs. off-site treatment of manure

Your organization may haul all the manure produced to an off-site location for disposal. Another option would be spreading on-site if the land base is available or on-site composting. Each of these options has benefits and drawbacks. When deciding on waste disposal it is important to consider all options or a combination of the options. Also consider who will be the lead on manure decisions.

Keep in mind, when spreading manure on- or off-site that spreading raw manure in combination with soiled bedding (stall waste) on your pasture is *not* an advisable practice. Spreading raw manure on your pasture or crop fields may spread parasites and weed seeds. Barn waste with wood products such as sawdust or wood shavings can deplete the soil of nitrogen (needed for grass to grow) due to the breakdown of carbon. This can result in an undesired outcome when attempting to grow forage.

Transfer of disease or infection between humans and animals or Zoonosis, is important to consider when dealing with manure, especially when that manure has multiple species inputs. A few things that you can do to prevent the transfer of diseases or infections when handling the manure are:

- Practice proper cleaning and disinfecting of equipment used to haul or transfer manure.
- Have dedicated routes of travel with manure on the fairgrounds to limit the amount of area that is exposed.
- Carefully consider manure storage site locations to minimize the amount of contact necessary for hauling and transferring manure.
- If you are responsible for the application of the manure, avoid excessive application rates and follow the Manure Management and Utilization Generally Accepted Agricultural Management Practices (GAAMPs) for application best practices.

To contact an expert in your area, visit extension.msu.edu/experts or call 888-MSUE4MI (888-678-3464)

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- Keep records of manure removal, locations the manure is taken, and where and when the manure is applied.

Composting on-site relieves some of the issues discussed above. It can also be alternate income source for the fair or expo or an associated group. Composting is also more time and labor intensive.

Hauling and spreading checklist

Preparing to dispose of waste ahead of time is important. By doing this preparation you can make the best plans for your fair or expo. Collect the following useful information:

- The type of spreader or transfer equipment you plan to use
- The volume the manure spreader can hold
- How you plan to put manure into the spreader
- The route to the farm or field should avoid sensitive areas (surface water and wetlands, limited-weight traffic roads)
- Avoid sensitive neighboring facilities (schools and hospitals). Being a good neighbor as you move manure will help with community relationships.
- Plan for keeping records of who took manure, route, and that they agreed to apply it according to GAAMPs standards.

The [Manure Management and Utilization GAAMPs](#) describe recommendations for best management practices backed by scientific research. These practices help to prevent manure from impacting the environment as well as unplanned manure releases. Additionally, they promote good neighbor relations and garner community support, which is particularly important for fairs and expos.

Take the manure application conditions into account when planning a destination for the manure:

- Slope and drainage of fields: Consider how much of a slope exists and how likely the manure is to run off.
- Weather forecasts and seasonal conditions: Pay attention. Conditions will differ in the spring and fall because of soil temperature and saturated soils. In the summer, heavy rains can be an issue. The [Michigan EnviroImpact Tool](#) will help aid in your manure application decision.
- Snow and water saturation levels in fields: Examine field conditions. If the ground is wet, this can cause issues with ruts from tractor tires, compaction of the soil, and possible runoff of manure nutrients.
- Soil analysis results: If manure from the site is being taken by off-site please encourage the landowner to have regular soil tests. If the site has its own fields regular soil testing is important.

Those who are involved in overseeing manure disposal may be responsible to ensure proper application. It is in the best interest of the fair or expo to ensure manure disposal is done according to best practices. The recipient of the manure is also responsible for proper application.



Plan a safe route from the storages to the transfer equipment. Avoid high traffic areas.

Composting manure

Composting is a managed biological decomposition process that converts organic matter into stable, soil-like material. Bacteria and fungi break down organic components of manure and bedding into smaller particles. The resulting compost is a dark, earthy-smelling product like potting soil. (See Figure 1.)

Four key factors will determine the success of your composting efforts:

- 1) **Keep it green.** Less bedding in the compost results in a faster process. A carbon-to-nitrogen (C:N) ratio between 15:1 and 40:1 is ideal. If you need to add nitrogen to the mixture, you can accomplish this by adding higher N content materials such as grass clippings (17:1), wasted hay (15–32:1), or N fertilizer to the pile (1 pound of urea nitrogen per cubic yard of collected waste).
- 2) **Keep it wet.** Generally, compost should be moist to the touch, it should feel like a damp sponge. A moisture content range of 40 to 60% is the goal. If the pile is too wet, aeration or turning, mixing, or moving the pile must be done to restart active composting. If too dry, water should be added, preferably by a uniform, consistent spray.
- 3) **Get it hot.** The rise in temperature is a result and an indicator of composting activity and microbial respiration. Temperatures within this range, 100 to 150 degrees Fahrenheit, enhance microbial reproduction. At 140 degrees Fahrenheit or higher, pathogens, weed seeds, and fly larvae in the composting materials are destroyed. Temperatures above 150 degrees Fahrenheit kill composting organisms and therefore, are not desirable. Use a long-stem thermometer to monitor internal temperature.
- 4) **Keep it moving.** Aeration by turning, moving, or mixing the compost batch promotes the growth of hardier, more robust aerobic bacteria by infusing air into the materials and providing a desirable oxygen concentration of 5–20%. (Guthrie & Rozeboom, 2012)

A concrete base is an excellent choice for composting because it is easy to clean, maintain, and impermeable to prevent the leaching of nutrients from the compost pile into groundwater. When selecting a site for composting manure, always remember to follow environmental stewardship practices and be aware of factors such as prevailing winds, distance to property lines, wells, neighboring residences, slope of the site, and distance away from any surface water.

Notes: _____

Advantages of Composting Animal Manure

- Reduces manure volume by half
- Kills most parasites, bacteria, and weed seeds
- Breaks down bedding material
- Stabilizes nutrients into a product that can be used to enrich soil



Figure 1. Composted manure vs. uncomposted manure. (credit: T. Guthrie)