

Compost Bedded Pack Barn

Livestock
Management

Objective: an informational fact sheet
on compost bed packs as a bedding style
for cattle



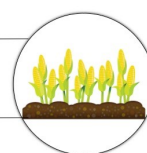
A housing system for dairy cattle that consists of a loose housing facility, where there are no stalls or partitions. These are usually bedded with wood shavings and the manure is composted in place and mechanically stirred on a regular basis.

What is it?

A compost bed pack is a type of bedding style for cattle, using bedding additives such as wood shavings or straw in a large open space. When the bedding areas or stalls of the barn are compostable areas, this is called a compost barn. Each cow is allotted at least 80 ft² to ensure less crowding and compaction on the compost. The pack is started with shavings and aerated twice a day with a cultivator. Fine shavings are added as needed to support the bedding pack when the bedding starts to stick to the cows (Endres and Janni, 2008). Some barns can be cleaned out annually while others have a varied schedule for bedding removal depending on the state of the compost pile. With good ventilation and microbial action in the compost, moisture in the compost pack can be managed. With optimal management, this style of barn can work in a variety of climate conditions and farming systems.



Cow comfort is increased as the cows, and cows lie down more (photo supplied by Gert & Peggy Brekveld).



Why Should We Use It?

The main reason for choosing this type of bedding style is cow comfort. With no stalls fixed in place, cows can sleep wherever they want and as close as they want to one another. They are any-breed friendly because you do not have to customize your stall size to the average size of a certain breed. This bedding style also works for milking cows, a maternity ward and heifers. Less injury due to stall hardware is a big plus. Cost of building this type of barn is similar to other styles of barns, but can use a larger area of land. Labour for cleaning the stalls is reduced. Cows stay clean, have decreased incidents of lameness and somatic cell counts can sometimes be decreased (*Janni et al. 2007*). *Klaas et al. (2010)* report that the barns have a dry, soft, non-smelling bedding and walking area but cow cleanliness can vary significantly.

Key Points about Compost Packs

- Space is important. Ensure that there are at least 80 ft² for large breeds and 65 ft² for smaller breeds. Some farmers add more room to ensure success. More space reduces the management of the compost pack.
- Bedding is important. Look for a good source of fine wood shavings. Finely chopped straw may also work. A good bedding source helps with the microbial balance of the compost pack.
- Air is important. Aerate or stir the pack twice a day. Compaction can cause a change in the microbial community in the compost pack. Ventilation in the barn reduces the moisture in the barn and helps keep the compost pack healthy, even in the cold months.
- Cow condition is important. Watch the cows. If the bedding is sticking to the animals, it is time to add more clean bedding materials.
- Milking routines are important. Make sure that the teats are prepared thoroughly before milking. Somatic cell counts will let you know if this practice needs improvement.





Further Research Needed

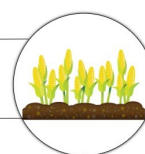
While the cows enjoy the freedom of laying wherever they choose, there are still some challenges involved with this system. With the cold and wet winter weather comes more challenges for the composting process compared to in hotter and dryer weather. Further research is needed to determine the effects of variable temperatures in Northern Ontario on the composting effect of the barn. Ventilation and air exchange research could help with ensuring that the pack doesn't become uncomfortable for the cows. A limiting factor to using these barns is the availability of wood shavings, which is currently the most effective bedding material for composting. Additional research on bedding alternatives and their impact on the composting process is needed.



Views from the Field

Aeration of the pack is an art and a science. The cows need to have space to move but they still tend to lay in the same spots. Paying attention to the cows is also how to determine if the pack is too hot through the addition of too much bedding. Cows will wander and stand in the alleys when the pack is too hot. While there is a worry about cell count, making sure the compost is well aerated with the proper amount of bedding will ensure that they cows are healthy. The key is to keep the bedding from becoming too compacted. One barn has switched from compost due to overcrowding. Overcrowding can cause too much compaction and disrupt the composting processes.

Shaving used for bedding is a vital part of successful compost packs. Having a steady supply of wood shavings is important and many say to have that contracted to guarantee a steady supply. Canola bedding is considered to be risky to compost, so it is recommended to avoid it or use sparingly if other bedding options are limited. According to Barberg *et al.* (2007), the main concerns of farmers is the availability and cost of bedding/shavings, especially as this style of barn becomes more popular.



For More Information:

OMAFRA Factsheet on Compost Bedding Pack Barns:

<http://www.omafra.gov.on.ca/english/engineer/facts/15-025.htm>



All pictures supplied by Gert & Peggy Brekveld



References:

- Barberg, A.E., Endres, M.I., Salfer, J.A. and Reneau, J.K., 2007. Performance and welfare of dairy cows in an alternative housing system in Minnesota. *Journal of Dairy Science*, 90(3), pp.1575-1583.
- Endres, M.I. and Janni, K.A., 2008. Compost bedded pack barns for dairy cows. Online. eXtension, Univ. of Nebraska-Lincoln, Lincoln, NE. <https://www.extension.umn.edu/agriculture/dairy/facilities/compost-bedded-pack-barns/>
- Klaas, I.C., Bjerg, B., Friedmann, S. and Bar, D., 2010. Cultivated barns for dairy cows-an option to promote cattle welfare and environmental protection in Denmark?. *Dansk veterinaertidsskrift*, 93 (9), pp.20-29.
- Janni, K.A., Endres, M.I., Reneau, J.K. and Schoper, W.W., 2007. Compost dairy barn layout and management recommendations. *Applied engineering in agriculture*, 23(1), pp.97-102.

