

# Think it Through Before Building a Compost Bedded Pack Barn

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COOPERATIVE  
EXTENSION  
SERVICE



Choosing the environment where lactating dairy cows will spend the majority of their time is an important decision. This choice has considerable influence on animal productivity, health, and well-being, milk quality, and farm profitability. In the decision-making process, dairy producers should consider what system will work best for their respective situations given local climatic conditions, construction and building costs, labor availability, long-term maintenance and upkeep costs, and investment profitability. Traditionally, housing options for lactating dairy cows have consisted of loose-housing, tie-stall, and freestall barns.

Recently, some innovative dairy producers have introduced a new twist to the loose-housing system generally referred to as a compost bedded pack barn. Currently, there are several compost bedded pack barns in Kentucky with many more under construction. The key component of a compost bedded pack barn is a large, open resting area generally bedded with sawdust, dry fine wood shavings, or other organic materials. When managed properly, compost bedded pack barns are an excellent housing alternative for dairy cows. Reported benefits of these barns include improved cow comfort, longevity, heat detection, and production along with reduced somatic cell counts, culling rates, lameness incidence, and fly populations. On the other hand, when managed poorly, they can be a milk quality and farm profitability disaster. Given the success of Kentucky dairy producers who have built these barns, many other producers are considering compost bedded pack barns for their herds. Before making a decision to build a compost bedded pack barn, dairy producers should consider the following:

Sawdust supply is limited. Thus far, the primary limitation for compost bedded pack barns has been sawdust availability. Though other materials have been examined and the search for alternatives continues, alternative materials have not performed as well as sawdust in on-farm or university experiments. So, before you build a compost bedded pack barn, you better be sure that you have an adequate, readily available, reasonably-priced sawdust supply. Simple rules of supply and demand dictate that as more producers build these barns, the demand for sawdust will increase which will be followed by an increase in price. Furthermore, across Kentucky, demand for sawdust is also affected by alternative, non-farm uses of sawdust.

This is not an old-fashioned bedded pack barn. For many of us, the term "bedded pack" conjures up an image of an old barn where straw is frequently added and stacked through the winter until it gets high enough that removing the bedding and manure mix becomes necessary. Those barns provide an excellent environment for bacteria to grow and flourish creating mastitis and other health problems. Unlike the more traditional straw-based bedded packs, compost bedded pack barns are intensively managed to encourage composting of manure and organic material. To manage a compost bedded pack barn, it is important to understand the keys to successful composting. Successful composting hinges on maintaining an appropriate balance of air (oxygen), moisture, temperature, amount of organic matter (sawdust and manure), and microbial population size and activity.

Risks are higher for early adopters. This concept is still new enough that producers

who are building compost bedded pack barns would still be considered early adopters. It is important to remember that while rewards may be higher for early adopters, risks are also higher. We are still learning about compost bedded pack barns, mostly from producer observations. There has been very little research conducted in these barns at this stage. Many questions remain as to modifications to existing layouts and recommended practices and long-term implications. Some Kentucky producers have built their barns with dimensions that would allow for facility modification for addition of freestalls in the future. This allows for flexibility if producers decide the facility does not meet their needs or if changing market conditions necessitate modifying facilities.

It's hotter in Kentucky than in Minnesota. Minnesota dairy producers and researchers have been the leaders in compost bedded pack barn adoption. Consequently, most of the recommendations in available publications are based on Minnesota conditions. Minnesota recommendations are to provide at least 85 (65 for Jerseys) square feet of resting space per cow. Because of the increased heat and humidity in Kentucky, which alters the amount of moisture in the composting environment, at least 90 to 100 square feet of resting space per cow should be provided. Furthermore, the importance of adequate ventilation (barn location, high sidewalls, open ridges, and fans) is magnified.

Feed and water access are still essential. In efforts to build a low-cost facility, the temptation exists to shortcut feed and water access. For optimum animal performance and health, feed and water should be easily accessible and readily available at all times. Provide a minimum of 24 to 30 inches of feed bunk space per cow and two feet of water tank perimeter per 15 to 20 cows.

Waste handling will change. A compost-bedded pack barn will likely reduce required manure storage capacity; however, it may be necessary to have equipment to handle both liquid and dry manure. Manure from feed alleys will need to be managed separately from the manure/compost mix. With the compost mix cleaned out once or twice a year, labor requirements for handling and disposing of the material should also be considered.

Benefits will be herd specific. Producers should be realistic and cautious about anticipated benefits from building a compost bedded pack barn. Some of the Kentucky producers who have constructed these barns have observed some impressive improvements in somatic cell counts and production levels. It is important to remember that many of these dairies transitioned from having cows on pasture year-round to having cows in a more environmentally-controlled environment. Results may not be as dramatic for farms switching from a freestall barn to a compost bedded back barn. Additionally, other management changes may have been made simultaneously, making it difficult to determine which changes actually triggered the observed improvements.