**The University of Vermont Extension Bedded-Pack Workshops**

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**What is a bedded pack?**

Bedded pack barns consist of an open resting space along with a feed alley (usually concrete).

In a conventional bedded pack, fresh dry straw or corn stalks are added daily for a period of 4-6 weeks before removal and replacement. It results in anaerobic fermentation. These systems are difficult to manage from a bacterial growth standpoint. Sufficient bedding needs to be added to keep animals clean and dry.

A compost bedded pack (**CBP**) barn is bedded with fine, dry wood sawdust or other fine materials and is cultivated twice a day to a depth of 8 to 12 inches, which generates aerobic decomposition and (ideally) a temperature of >120F. Overall, CBP barns aim to create a more comfortable environment for dairy cows while also addressing some environmental concerns such as manure management and nutrient runoff. This handout will focus primarily on CBP barn systems.

***Key points to keep in mind***

**Management and maintenance:** Compost bedded pack barns require regular management and maintenance. This includes daily turning and mixing of the bedding materials to ensure proper composting. If not managed effectively, the bedding can become too wet and composting process stops.

**Bedding material:** Selecting the right bedding material is crucial. Dry, fine sawdust is typically used. Sourcing and maintaining an adequate supply can be a challenge. The bedding material must be of high quality and regularly replenished.

**Composting process:** Proper composting is essential for maintaining a comfortable and healthy environment. Monitoring the composting process is necessary to ensure that the pack remains comfortable for the animals. One characteristic that can be monitored is pack temperature using a compost thermometer at a depth of 10-12 inches below the surface. Moisture of the pack should be less than 65% and more than 40%.

**Ventilation:** Maintaining proper ventilation can be challenging in CBP barns, especially during extreme weather conditions. Ventilation is important for reducing cow heat stress during the summer, but also to help remove moisture from the pack throughout the year.

**Space requirements:** Compost bedded pack barns require more space per cow compared to freestall barns. It is important not to overstock the pack area. Suggested space per cow is greater than 100 square feet in the pack area, not including the feed lane area.

**Benefits:** Despite the challenges, CBP barns offer several benefits, including improved cow comfort, reduced lameness, expression of natural behaviors, and potential labor savings. It is important to note that the success of CBP barns depends on proper management and maintenance. Regular turning and aerating of the compost bedding, as well as ensuring proper ventilation, are crucial to realizing these benefits.

**What about udder health?** Cow udder health can be negatively affected in compost bedded pack barns if the management and hygiene practices are not optimal. The key to maintaining udder health in compost bedded pack barns is proper management of the compost bedding material. If the compost becomes excessively wet or contaminated with manure, it can lead to an increased risk of mastitis. To prevent mastitis, it is important to implement excellent milking practices, vaccinate cows for coliform mastitis, and monitor the cows for signs of infection. In addition, the design and maintenance of the compost bedded pack should prioritize cow comfort. Adequate space for resting, proper bedding material, and a comfortable environment contribute to cow well-being which reduces stress and improves immunity. Again, the suggested space is 100 square feet or more per cow in the resting pack area.

**What about foot and leg health?**

Compost bedded pack barns are designed to provide a comfortable resting area for cows, which can have a positive effect on their foot and leg health. Studies have indicated that CBP, compared with conventional systems such as freestall barns, have the potential to improve the welfare of dairy cows. In particular, the main reported benefits include improved comfort during resting, better foot and leg health, and more natural animal behavior. Lobeck et al. (2011) found that prevalence of lameness, hock lesions, and severe hock lesions was lower in CBP (4.4, 3.8, and 0.8%, respectively) than in cross-ventilated freestall (15.9, 31.2, and 6.5%, respectively) and naturally ventilated freestall (13.1, 23.9, and 6.3%, respectively) barns.

**What research has shown?**

A review of multiple studies (Leso et al., 2020) indicated that CBP barns can provide a viable alternative to freestall barns and conventional bedded packs for housing dairy cows. As mentioned above, the main benefits of CBP system include improved cow comfort, better foot and leg health, more natural animal behavior, and improved manure management. For good results, however, producers need to pay particular attention to maintaining adequate pack moisture (less than 65%). High pack moisture is associated with more dirty cows, higher mastitis risk, reduced cow comfort, and higher gaseous emissions. Maintaining dry bedding during the winter can be difficult as cold and humid weather limits evaporation of moisture from the pack. More dry bedding needs to be added to the pack to absorb excessive pack moisture during this time of the year. Most economic analyses indicate that CBP has higher bedding costs than freestall systems. The availability and cost of bedding materials is considered the main limit to the adoption of the CBP housing system.

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