

Managing Compost Bedded Dairy Barns

DAVE FISCHER

EDWARDSVILLE, ILL.



A number of compost bedded dairy barns are being built in the Midwest, as well as Illinois. The composting bedded pack is created by mixing the livestock feces and urine with a fine particle bedding source like sawdust or wood shavings.

This mechanical mixing of the carbon and nitrogen sources allows for an aerobic condition, which creates a breakdown of the organic matter into a rapidly decaying compost material.

The bacteria needed to break down the manure and bedding will grow best with a carbon-nitrogen ratio of 25:1 and moisture of 50 to 60 percent. Achieving a compost temperature of 130 degrees F will efficiently compost the organic material and lead to the destruction of pathogens, fly larvae and weed seeds. A properly managed compost bedded pack will provide a fluffy, soft, dry, and relatively odor-free bed for the animals. It is important that the bedded pack be stirred twice a day. Following are some of the major considerations when designing the barn:

- Provide a 4-foot solid wall plus a 10- to 12-foot open sidewall (14- to 16-ft. sidewall) on compost barns and a 4-foot concrete wall between the bedded pack and feed alley.
- Provide a 3- to 6-foot overhang to reduce rain/snow from entering the bedded pack.
- Construct open ridges to provide proper ventilation and fans to help keep beds dry.
- Bedded area needs to allow for a minimum of 80 square feet of resting area per cow for large breeds and 65 square feet per animal for smaller breeds. Do not overcrowd.

- Adequate fans are required for ventilation, to remove heat, provide air movement for cow comfort, and aid in keeping the bedded pack surface dry.

- Use a dirt/clay base under the bedding. Start the compost bedded pack with 18 to 24 inches of kiln-dry sawdust/wood shavings. Green or wet sawdust is not recommended.

- Aerate/till the pack to a depth of 10 to 12 inches twice daily when the cows are removed from the barn. This is extremely important in order to facilitate aerobic decomposition and to keep the bedded surface dryer and nearly level for improved cow comfort.

- Fresh kiln-dry sawdust bedding material is added when the bedded pack gets moist enough to stick to the cows' flank and belly – usually every three to four weeks.

- Well-managed bedded packs will allow for cleaner cows and reduced somatic cell counts.

- Excellent cow pre-milking prep is important with compost barns, as with all housing options. Clipping/singeing udders will help to reduce bedded material clinging on the cow's udder.

- Cost of bedding is approximately 2 to 3 times higher for compost barns versus sand freestall.

There are a number of reasons for the compost barn's popularity including improved cow comfort, improved heat detection, greater cow longevity, reduced sizing for long-term manure storage, and less costly manure handling. Compost bedded pack seems to provide for cleaner cows and reduced somatic cell count when compared to other bedding choices in a loose housing environment. Δ

Dave Fischer is U of I Extension Educator, Animal Systems/Dairy, at the Edwardsville Extension Center.