

ANIMAL WELL-BEING

By Jean Bonhotal and Mary Schwarz

Management is the key to the successful use of dried manure solids as bedding in stalls

Save money on bedding

To assess the impact on herd health of using dried manure solids (DMS) as bedding, the Cornell Waste Management Institute studied six dairies using different types of DMS strategies: drum composted for 24 hours, drum composted for three days, windrow composted for about 10 days, digested then separated, separated and piled for seven days, and separated then used. One dairy had side-by-side pens using sand, DMS directly from the separator and DMS that was drum composted for only part of the study period.

Samples of unused and used bedding were taken over the course of a year and analyzed for bacterial content and physical properties, such as moisture and particle size.

The study amassed an amazing amount of data, but answers to these two questions are of utmost importance to dairies:

1. Can I save money by using DMS for bedding?
2. Will I jeopardize herd health bedding with DMS?

Our study suggests that properly managed DMS can provide an economic benefit without compromising herd health. Five dairies, whose costs we analyzed, saved between 1 and 26 cents per cwt. of milk produced through the use of manure solids as bedding. Savings came through reduced costs of manure hauling and purchased bedding. One dairy made money through the sale of DMS.

Sand, composted DMS and solids that were digested started out with lower bacterial levels than

the "green" DMS. However, those strategies that started with "clean" bedding tended to have significantly higher bacteria levels in used bedding. There are several possible explanations for this besides how "clean" the bedding was when put in stalls:

- Bedding may have started out too clean, meaning there was no competition from other bacteria.
- Bacterial levels in used bedding are more likely the result of bacteria in fresh manure.
- How well stalls are cleaned.
- What is tracked in from the alleys.

Mastitis and somatic cell count (SCC) records were analyzed in relation to bacteria level and type and also the physical properties of the bedding. Although mastitis differed among bedding strategies, bacteria levels and properties of bedding had no effect on mastitis incidence.

For most bedding strategies, elevated SCC was affected by season, lactation number and milk production, rather than bacterial levels or bedding properties. However, one strategy had a lower number of cows with abnormal SCC when there was greater moisture and more fine particles in the used bedding. And for another bedding strategy, increased levels of *Klebsiella* in the used bedding yielded fewer animals with elevated SCC. Both of these situations are contrary to what we would expect.

What really matters? Management. As with any bedding, keeping the stalls free of fresh manure and urine helps ensure DMS bedding provides cows with a clean, comfortable space in which to lie.

Also, one DMS strategy is no better than any other in terms of the product produced. It's important for dairies to choose a DMS strategy that's affordable and fits into their procedures. □



Dry manure solids can be an economical bedding material that doesn't result in high levels of bacteria if managed well. Photo by Cornell Waste Management Institute.

FYI

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- For more information on the dried manure solids research and other work by the Cornell Waste Management Institute, see <http://cwmi.css.cornell.edu/bedding.htm>
- Research sponsors included the New York State Energy Research and Development Authority and New York Farm Viability Institute.