Dairy Cow Bedding – What Really Happens When We Reuse Separated Dairy Solids?

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Using separated dairy solids for bedding is a great idea. Others in North America are doing it, why can't we? This is best done by composting the separated dairy solids to:

1. kill potentially harmful microbes
2. reduce the readily available food sources for potentially harmful microbes
3. build up a population of beneficial microbes that can keep potentially harmful microbes in check
4. dry the material to allow moisture absorption from urine and feces

We need to understand what is happening at the microbial level in the separated solids, in the stalls, in the manure, and on the udders of the cows. Using separated dairy solids introduces a high and varied population of microbes. Most of these microbes are not harmful, and compete with and consume some of the potentially harmful microbes.

Using separated dairy solids for bedding may be better than using wet sawdust or sand, because it contains a greater diversity of microbes to keep disease in check. There is only a small population of microbes in sand or sawdust which means that a potentially harmful microbe entering the sand or sawdust can flourish because it has no competition.

There are billions of microbes in each gram of separated dairy solids. Most of them are not harmful, but some of them are.

The moisture content and type of bedding is important because it affects what adheres to the cow's udder. We know that microbes live in the water film around particles. Wet sticky bedding results in a greater likelihood of harmful microbes entering the teat canal.

This complex microbial ecology has led researchers to conclude that somatic cell count and the risk of microbial infection is more about stall management than what actually is used as bedding material. Let's review what we do know about microbes in this environment:

1. cow manure contains billions of microbes, only a few of which are potentially harmful
2. potentially harmful microbes require readily available carbon such as proteins and sugars for food

3. animal manure, milk and urine contain protein and sugars that feed potentially harmful microbes
4. microbes live in a water film around solid particles
5. potentially harmful microbes are introduced in feces and from outside contact
6. a flourishing healthy population of microbes keeps the growth of potentially harmful microbes in check.

Milk, feces and urine are food for potentially harmful microbes

Composting separated dairy solids for three days in a rotary drum to achieve potentially harmful bacteria kill does not address the moisture content of the bedding, or the additional available carbon for the microbes.

Sterilizing separated dairy solids through UV may be more harmful than a short composting process because it kills all microbes, good and bad. There is no longer any competition for potentially harmful microbes, and a flush of available carbon that potentially harmful microbes thrive on. We can predict that a short composting process would be better than UV sterilization because it kills the harmful microbes but does not kill a large population of healthy and beneficial microbes.

A longer composting will produce a higher quality and safer bedding material because the potentially harmful microbes are killed, the readily available food supply for potentially harmful microbes has been used up, the bedding is drier allowing more moisture absorption, and a population of beneficial microbes exists that can eliminate potentially harmful microbes before they cause herd health concerns.

Properly composted separated dairy solids contain billions of beneficial microbes per gram that will keep potentially harmful microbes in check.

Bedding management in the stalls remains the most important factor in reducing the risk of increasing somatic cell counts and udder infections.