

When Using Green Sawdust, Take These Precautions to Minimize Risk

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In many areas of Kentucky, kiln-dried sawdust and wood shavings are becoming increasingly hard to find and more expensive. The current economic slowdown and resulting decrease in construction have contributed to less sawdust being available for bedding. At the same time, other industries (i.e. biofuels, dark-fire tobacco, charcoal) have increased their use of wood byproducts. This has created a major headache for many dairy producers. Though kiln-dried sawdust is preferred because of lower bacterial populations prior to use, more dairy producers are using green sawdust (sawdust that comes from uncured wood) as bedding in both freestall and compost bedded pack barns.

Understanding the Risks

High bacteria levels in bedding materials lead to high bacteria levels on teat surfaces and teat ends. In turn, this increased exposure to bacteria can contribute to increased incidence of environmental mastitis. Often, green sawdust is contaminated with *Klebsiella* bacteria (as much as 10 million bacteria per gram) when it arrives on the farm. Such high contamination can lead to severe coliform mastitis outbreaks.

Of course, it is also important to remember that bacteria need moisture, organic nutrients, and the appropriate temperature to grow. And, this is where green sawdust can lead to problems. Compared to kiln-dried sawdust, green sawdust has a higher moisture content which leads to higher coliform and *Klebsiella* bacteria counts. The moisture content of green sawdust can be as high as 50-60% compared to only 10-15% for kiln-dried sawdust that is stored inside and protected from rain. Thus, green sawdust can provide a great environment for growth of mastitis-causing bacteria. This problem is made worse when cows add manure, urine, and milk to the bedding material. Even with kiln-dried sawdust, this added moisture and organic matter can create an environment conducive to bacterial growth. However, with green sawdust, the bacterial levels increase to levels normally associated with a high incidence of environmental mastitis much faster than with kiln-dried sawdust.

Actual bacteria populations and moisture levels in green sawdust vary tremendously. Some sources of green sawdust may be better than others. However, this variation is where people often get into trouble. You may get by with using green sawdust for a while without experiencing any problems. But, a periodic highly-contaminated or very wet load of green sawdust can lead to an outbreak of clinical mastitis. Compost bedded pack barns may be more forgiving of green sawdust than freestalls because of the drying action and heat available in a well-managed compost. But, as of now, there is no research to support the use of green sawdust in compost bedded pack barns. Generally speaking, dairy industry experts still highly encourage the use of kiln-dried sawdust as a bedding material in both freestall and compost bedded pack barns. However, as a result of the diminished supply and increased prices for kiln-dried sawdust, more producers are using green sawdust in both facilities. If you decide to take the risks associated with using green sawdust, here are some precautions you can take to minimize the risks.

Precautions to Minimize Risk

1. Consider using a coliform mastitis vaccine.

A coliform mastitis vaccine (i.e. J-5 Bacterin™, Mastiguard™, J Vac®, Endovac-Bovi®) will reduce the number and severity of clinical coliform mastitis cases. These vaccines are helpful in any scenario, but the potential benefits are greater when using green sawdust. Check with your veterinarian for recommended protocols and booster schedules for commercially available vaccines.

2. Keep the area where cows lie dry and clean.

Strive to provide an environment where the cow's teats are only exposed to clean, dry, low-bacteria bedding. Because, with green sawdust, the material you are using is already more moist, you may need to add new bedding or remove old, wet, contaminated bedding from the back of the stall more frequently. As always, you should add new bedding and remove soiled material from the rear of the stall every milking. Ideally, sawdust bedding should be changed every other day.

3. Keep bedding dry.

Store bedding in a dry environment. Leaving any type of sawdust outside increases the chance of exposure to rain which will increase the moisture content of the sawdust before it is used.

4. Clean alleys frequently.

When you keep the alleys where cows walk clean, they are less likely to track manure into the stalls which keeps the stalls cleaner and reduces bedding contamination.

5. Provide adequate ventilation.

Both natural (open sidewalls and ridge opening) and mechanical ventilation (fans) can minimize moisture in the environment and reduce bedding moisture levels.

6. Adhere to a proper milking protocol.

Minimize or eliminate the use of water used in cleaning cows. Remove dirt and manure from the cow's teats before milking and allow at least 30 seconds of pre-dip contact time. Use individual paper or cloth towels (properly cleaned) to thoroughly dry each teat. Attach the milking unit within 1 to 1.5 minutes after first contact with the teat to allow for optimal oxytocin flow. Lastly, dip each teat with an approved effective germicidal post-dip.

7. Use material with large particles.

If you have a choice among green sawdust sources, look for materials with larger particles. Sawdust with large particles supports less bacterial growth than finer materials. Additionally, the finer material is more likely to stick to udders and teats and bacteria may be more easily introduced into the teat canal.

8. Maintain proper nutrition.

Nutrition plays a key role in the cow's ability to resist new infections and may decrease the severity of new mastitis infections. Thus, ensuring that cows receive a balanced ration including adequate levels of Vitamin E, Vitamin A, copper, zinc, and selenium helps prevent new infections. But, remember feed additives will not correct poor mastitis prevention practices. Additionally, make sure that cows have high quality feed available at all times to

optimize dry matter intake.

9. Culture infected cows.

A microbiological analysis, or milk culture, should be performed on milk samples collected from cows showing clinical signs of mastitis to identify which bacteria are causing the mastitis. This will help determine whether the bedding is the source of the infection. Extra care and precaution are necessary during the collection process using strict, clean, aseptic procedures to be sure that the bacteria originated from milk from within the udder and not the cow's teat end or hair, the sampler's hands, or the barn environment. Samples may be frozen prior to submission.