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UNIVERSITY OF KENTUCKY College of Agriculture

Kentucky Dairy Notes

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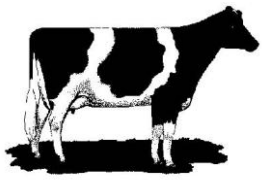

When Using Green Sawdust, Take These Precautions to Minimize Risk

Jeffrey Bewley

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.

Wet, Cooler Weather Has Impacted Forage Nutrient Content

Donna M. Amaral-Phillips

This year's growing conditions have presented some opportunities as well as challenges. For the most part, yields have been greater than previous years, thus allowing plenty of forage in storage. However, the lower temperatures and consistent rains have changed the growing conditions for these plants and the resulting nutritional value of this crop. Recognizing these potential changes in dry matter or moisture content, fermentation, and protein content and making changes to the cows' feeding program can pay dividends in increased profits.

Measure Dry Matter Weekly

Rations are balanced to provide a certain amount of dry matter from each ingredient. As the dry matter or moisture content changes, the amount of the ingredient added to the TMR mix also needs to change. Measuring the moisture (dry matter) content of silages (or baleages) and wet byproducts at least weekly is always a sound management practice, but it is even more critical this year. In several parts of Kentucky, rainfall amounts set records. This combined with the slower growing season has changed the moisture content of silages going into storage as well as silage already in storage. Changes in the moisture content of stored forages are seen in both bunkers (covered and uncovered) as well as bags. A couple percentage units difference in moisture or dry matter content, changes the amount of silage (or wet byproducts) that needs to be added to a TMR mixer. If these changes are not made, the ration will not be balanced to the specifications of the original ration and may negatively affect production. For example, if the moisture content increases by 3 percentage units, 550 more pounds of silage need to be added to a TMR mixer to supply the same amount of dry matter for a herd of 100 cows fed once daily 20 lbs of dry matter from silage. The table below illustrates this concept at different dry matter or moisture contents. (Remember that dry matter and moisture content of a forage add to 100%.)

Table: Amount of silage needed to supply 20 lbs DM/cow/day at differing dry matter contents of corn silage.

	Amount to feed per cow (lbs as fed/day)	Amount (lbs) in TMR mixer for 100 cows – one batch per day
35 % dry matter (65% moisture)	57	5700
32 % dry matter (68% moisture)	62.5	6250
27 % dry matter (73% moisture)	74	7400

The amount of feed per cow = lbs of dry matter/cow/day divided by dry matter content (move the decimal point two places to the left in the figure for dry matter %).
Example: Amount to feed at 35% dry matter = 20 lbs DM/cow/day divided by 0.35 = 57 lbs of silage

The moisture or dry matter content can be determined using a Koster tester (available through NASCO or other supply companies) or microwave oven dedicated for this purpose (see procedure at the end of this article). Many nutritionists also have the capability of measuring the dry matter content of forages. Regardless, dry matter content of forages and wet-byproducts should be tested at least weekly and amounts fed adjusted accordingly.

Nutritional content of silages and hay

This year's growing conditions have resulted in some varieties and locations where the protein content of corn silage is testing lower than normal and silages are wetter than usual. Energy content seems to be quite good. Thus, grain mixes will need to supply additional protein to the total diet. If these adjustments are not made, production can be compromised.

The frequent rainfall this past spring presented many challenges in harvesting quality hay. With hay harvested later than the optimum stage of maturity (later than normal), fiber content is higher and digestibility and energy content lower. Some of these forages are a challenge to incorporate into feeding programs because of their lower quality. Even 5 lbs of hay of a lower quality can result in lower milk production than expected. You do not need to be feeding 15 lbs or more of lower quality hay to see decreases in milk production.

The take home message here is to test **all** forages being fed to not only the milking herd but also dry cows and heifers. Then, **use** these results to balance rations for all groups of cows and heifers. Following these practices allows one to make adjustments in feeding and management programs before heifer growth or milk production is negatively affected.

Fermentation analysis of fermented feeds

Some forage testing laboratories are able to measure the amount of lactic and acetic acid found in fermented silages. These results reflect how well the silage fermented. These analyses are used to determine why cows are not eating as well as expected or not milking well.
For accurate results, these samples need to be taken from silage 8-10 inches below or beyond the face, frozen, and shipped next day delivery on ice in a cooler to the laboratory. I have seen several samples of corn silage which have less than optimum fermentation analysis. The question then becomes (1) did these silages not ferment properly thus explaining the less than optimum milk production or (2) do these results reflect improper silage shipment to the laboratory especially when low concentrations of lactic acid are found? Taking time to properly ship samples can help eliminate this second possibility.

Determination of dry matter content of silages and total mixed ration samples using a microwave oven.

Procedure:

1. Weigh out 100 gram of forage or total mixed ration on a plate to determine initial wet weight. (Need to use a scale that can accurately weight forages.)

2. Place an 8-oz glass of water (3/4 full) in the back right corner of the microwave. Try to keep the water level constant during microwave use.
3. For silages or feeds with 25 to 50% dry matter:
   A. Heat for 5 minutes on high power (times may change with wattage of microwave used)
   B. Stir feed, rotate plate and return to oven
   C. Heat for 3 minutes on high power
   D. Stir feed, rotate plate and return to oven
   E. Continue to heat at one minute intervals
   F. Continue to weigh, stir and rotate plate, and reheat sample until sample weight does not change more than 1 to 2 grams and/or feed starts to char.

4. Calculate Percent Moisture and Percent Dry Matter

$$\text{Percent Moisture} = \frac{\text{Wet Weight - Dry Weight}}{\text{Wet Weight}} \times 100$$

$$\text{Percent Dry Matter} = 100 - \text{Percent Moisture}$$

Blood Pregnancy Test
George Heersche, Jr.

BioPRYN is a commercially available cattle pregnancy test which measures pregnancy-specific protein B (PSPB) in the blood. PSPB is produced by the placenta and is present in the blood of a pregnant heifer or cow early after breeding until after calving. Animals should be 30 days or more after breeding before blood is taken for this test (32 days or more for embryo transfer), and more than 90 days after the previous calving so the PSPB from the previous pregnancy is gone.

The test is very accurate in determining pregnancy when used correctly and reasonably accurate in determining which heifers and cows are not pregnant. The not pregnant determination is not as accurate mainly because of embryo losses (animal was pregnant so has some PSPB in the blood).

BioPRYN is sold by Bio Tracking, Moscow, Idaho, (208)-882-9736**.** Detailed information can be found at biotracking@biotracking.com. There is a Bio Tracking affiliate in Bedford Indiana: Bedford Veterinary Labs, 888-488-9858. The total cost of the test varies depending on the number of samples submitted, lab location, and the costs of supplies, blood sampling, and shipping. The lab in Bedford, Indiana charges $2.40 per test for 26 or more samples, $3.15 per test for 11-25 samples, and $5.15 per test for 1-10 samples. Supplies are less than $1.00 per sample, most folks utilize on-farm personnel to take the blood samples, and the samples are shipped by the United States Postal Service.

2009 Kentucky 4-H Dairy Judging Team
Larissa H. Tucker

The team members of the 2009 Kentucky 4-H Dairy Judging Team are Alex Poole, Dylan Barber, Madison Shanks and Kevin Herndon. Dylan is a member of the Taylor County 4-H dairy club. Alex, Madison and Kevin are all from Spencer County. The team participated in the Pennsylvania All-American Dairy Judging Contest held September21, 2009. They also competed at the National 4-H Dairy Judging Contest held in conjunction with the World Dairy Expo on September 28, 2009.

The team competed against 12 other teams from across the United States and had an excellent day at the Pennsylvania All-American Contest. They were the second place team overall in the 4-H contest. They placed in the top five in three of the five breeds. They won the Holstein breed team competition. In oral reasons the team placed third overall.

Several individual awards were received by the team members. Kevin Herndon placed 3rd in Guernseys. Madison Shanks placed fourth in Holsteins. Alex Poole placed third in Holsteins, Jerseys, and Oral Reasons. She was also third high individual overall in the contest.

At the National 4-H Dairy Judging Contest, the team placed ninth overall. The team won the Jersey breed team award and was the 7th place team overall in oral reasons. On an individual basis two team members joined the All-American club, Alex Poole was the 22nd overall high individual and Madison Shanks placed 18th overall adding them to the recent list of All-Americans. Madison also placed 8th in the Jersey individual awards. Kevin Herndon placed fourth individually in Jerseys. Dylan Barber placed 21st in the Brown Swiss breed.

There are several people that we would like to thank for their continued support of the Dairy Judging program. The following breeders served as hosts for the workouts: Rocky Run Farm, Alpine Hill Swiss and University of Kentucky Dairy. We also thank the following sponsors for all their help and financial support: Kentucky Nutrition Services, Farm Credit Services of Mid-America, Oliver & Virginia Payne, Dairy Farmers of America, KABA/Select Sires, Kentucky Jersey Cattle Club, Church & Dwight, Neo-Gen, Kentucky Department of Agriculture, and Kentucky State Fair.

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