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This Month's Topics

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- * Where Can I Find Sawdust Sources?
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Ideas? Suggestions?

Welcome to the Compost Dairy Barn Newsletter. This newsletter is intended to facilitate networking among dairy producers using compost dairy barns and people interested in these facilities. We encourage your input. If you would like to share some of your experiences or have ideas for topics in future newsletters, contact Mindy Spiehs, Wayne Schoper, or Vince Crary.

What Have We Learned From Sampling Clean-Out Material of Compost Dairy Barns?

Compost dairy barns have been a fairly recent concept for dairy cattle housing. With the increased popularity of these barns being constructed, where do we go from here? Will there be enough sawdust available for everyone at a reasonable cost in the future? What other potential bedding materials are available? Can we re-compost this material and use it again? To get a better handle on these issues, the University of Minnesota will be conducting research to look at alternatives to sawdust.

What we know so far is that these barns do work well. But, there are two very important keys that make them work: 1) management; and 2) a dry surface for the cows to lie on. The surface of the pack must be stirred twice per day to incorporate the accumulation of manure into the pack. Also, sawdust must be added on a regular basis to maintain good cow cleanliness. Once the manure is incorporated into the pack, the presence of bacteria combined with heat and moisture begin to work together to break the sawdust down and render it into a mulch-like product that is

an excellent fertilizer.

This fall, I sampled six south central Minnesota area barns at clean-out to see what kind of material was being applied to farmers' fields. Nitrogen, Phosphorous and Potassium (NPK) are the main crop nutrients that were analyzed. The results showed an average NPK analysis of 21-8-15 lb/ton and 63% moisture content. According to this analysis, and allowing for application losses, there would be a need of about 15 ton per acre of this material to support a yield goal of 180 bushel corn, allowing for a 30% availability of the nitrogen in the manure.

We have been wondering about the carbon:nitrogen (C:N) ratio of the material coming out of these barns. Raw sawdust has a C:N ratio of 400:1. If enough of this was spread on a field that was planted to corn, the sawdust would tie up much of the nitrogen during its breakdown in the soil, causing a potential shortage of nitrogen to the growing corn crop. However, through our fall testing, we found that the C:N ratio average around 15:1. That is very good news. It is important that

ratio be less than 30:1 to be assured that very little, if any, nitrogen would be unavailable to the growing crop.

pH is a measure of the acidity or alkalinity of a substance. Neutral pH is 7.0. Anything higher than 7 is considered alkaline. One of the interesting phenomena that we have observed while reading the nutrient test results is how alkaline this material is. The average pH of our samples this fall averaged around 8.6. We will be looking at this during our continuing research to see what effect, if any, it has on cow and udder health.

In summary, sampling the manure at cleanout time from the compost dairy barns on these six dairy farms has helped answer a few questions many people have had. This sampling project has also shown that the sawdust bedding/manure material at cleanout had the same characteristics of well-rotted manure and it is a material ready to be utilized by the next year's corn crop.

Wayne Schoper is an Extension Educator in Brown and Nicollet Counties.

Frequently Asked Question: Where Can I Find Sources of Dry Wood Shavings and Sawdust?

There are a couple of places you can go to find local sources of dry wood shavings and sawdust. In Minnesota you can check the Minnesota Department of Natural Resources Utilization and Marketing Program website at <http://www.dnr.state.mn.us/forestry/um/index.html>. Under Available Products you can click on the

"Minnesota Primary Forest Products Producer Directory" link. On the Minnesota Primary Forest Products Producer Directory page you can choose "search by mill or producer type" or by "product". By searching for "kilns" you will get a list of mills that have wood drying capacity. Many of these mills do further wood processing, which can produce

dry sawdust or planer shavings that can be used for bedding. Many of these mills are already supplying the bedding market, although some burn the residue for heat.

Another place to look for sawdust and shavings suppliers is under the "Minnesota Secondary Forest Products Producer Directory" under Available Products.

The Secondary Directory will have some companies that have residue suitable for bedding. You can choose the "Search by products sold" link and then choose "Cabinet and furniture components", which would give you a listing of many large and small cabinet producers that would produce residues, some of which (con't on page 2)

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Frequently Asked Question (Con't)

could be suitable. Keep in mind that most of these companies are already doing something with their residue, so in order to access these dry wood shaving and sawdust, one will need to pay more than current market prices. Several other product categories, such as flooring, might also bear fruit.

Be sure to confirm that you are purchasing dry sawdust or wood shavings. Green sawdust is readily available from many sawmills however we have strong reservations about using green sawdust in compost dairy barns.

Based on composting research and one producer's experience, it is not recommended that cedar-based wood products be used in the compost dairy barn. Cedar contains natural oils and organic materials that inhibit microbial activity. Without these necessary microbes, the bedded pack may not heat and compost properly.

Another resource would be to contact one of the Minnesota Department of Natural Resources Product Utilization and Marketing staff in your area. They may be able to identify sources of dry wood shavings and sawdust in

your area.

In Wisconsin, you can find information about suppliers of wood shavings by going to the Wisconsin Department of Natural Resources Forest Utilization and Marketing web site at <http://www.woodindustry.forest.wisc.edu/> and search for suppliers of wood shavings and sawdust. Wisconsin also has a fact sheet that lists many suppliers of sawdust at <http://forest.wisc.edu/extension/publications/103.pdf>.

Answer provided by Kevin Janni and Mindy Spiels

Producer Thoughts—Ray and Cheryl Seibert, Sebeka, MN

Wow, what a year it has been. We moved the cows into the new barn on December 3, 2004. I must say it has been a learning experience. The benefits of the composting bedded pack have been obvious. We have had no leg problems and very few foot problems. I did have a cow completely amputate a teat. I'm not really sure how that happened. Here are a few boo boos and observations.

I tried a little too hard to stretch the amount of time between loads of sawdust. I would wait until I saw that the cows were getting dirty before I would order a load. The problem with that strategy is that if the weather turned humid and rainy the bedding got real wet real fast. I'm still learning how to manage this. It also seems that if the bedding gets too wet it can take a while to catch up. When the new bedding is mixed with the stuff underneath the new sawdust gets wet

faster. I guess that is part of the learning curve. If someone is considering a barn like this they must know that it will take a lot of bedding. Make sure that it is in the budget.

Another observation, cows tend to find ways to hurt themselves. I didn't pay enough attention to keeping the bedding pack level and a cow rolled into a hole next to the wall and spent the night beating her head against the wall. I pulled her out with the tractor and she did recover but it took a while. I take the time to get the bedding up against the walls now so it hasn't happened again but it was a little too close for comfort.

On a lighter note I must say that this bedded pack is a vast improvement over my old tie stall barn. The work is a lot more enjoyable. The cows are much healthier and so am I. We have been able to increase the herd from 50 cows to 68 inside of a

year and have only used only our own replacements. In the old barn we often had a hard time keeping it full. Clean comfortable cows are the key to any dairy farm.

Just one thought on the composting process. I have found that the pack needs to be clean and dry, because that is what the cows need. I think that the bedding heats because we are doing the right thing for the cows. I'm not sure that the heating is necessary to the success of the bedded pack. The heating (composting) occurs when we make a bedding pack that is good for the cows.

I continue to live and learn about cows and how to do what is right for them. Right now I try to be flexible and make adjustments when my ideas don't quite work out.

Merry Christmas to all of you and may the new year bring health and happiness.

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