University of Minnesota Extension Service

Compost Dairy Barn Newsletter

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This Month's Topics

Ideas? Suggestions?

Welcome to the Compost Dairy Barn Newsletter. This newsletter is published every other month by the University of Minnesota Compost Dairy Barn Group. It is intended to facilitate networking among people interested in compost dairy barns. Each newsletter contains a featured article, Frequently Asked Questions, and as space permits a Producer Spotlight.

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.

To view previously published newsletters visit the University of Minnesota Extension Dairy Team website at www.extension.umn.edu/dairy

Fundamentals of Compost Dairy Barn Management

We have been working with the concept of the compost dairy barn for a few years now and it seems that we learn something new just about every day. That might be an exaggeration, but we have learned a few things that seem to be cornerstones of good bedded pack management.

Research is ongoing at the University of Minnesota and that data will be published as time goes on. However, we have been able to establish that good quality, dry sawdust still works the best for a bedding material. Many producers have tried alternative materials such as corn stalks and various types of straw. The corn stalks hold water up to a certain point and then the cell walls release the water and create a real mess. Some producers have tried sawdust from cedar trees which did not work at all because of the material in the wood that inhibits the growth of bacteria. Research is being conducted to look at other possibilities such as soybean residue in the mix to reduce the expense of using pure sawdust.

So what are the fundamentals that we know at this point? What are some of the things that we know to work consistently in all barns? Following are some observations.

Particle Size and type of material – Dry fine wood shavings or sawdust seem to do the best job. Wood products have significant amounts of lignin which resists microbial breakdown and lasts longer. The fine material has more surface area and is conducive to good tilling. Wood chips or material with large chunks of wood does not work well at all. We have to be careful about none biodegradable material in the sawdust such as plastic and metal fragments. These do not break down and can cause problems at cleanout. Small particle size also breaks down easier and is ready to be field applied and serve as an excellent source of nutrients for growing crops.

Tilling – We know that good tilling of the pack is important for a variety of reasons. First of all, tilling incorporates oxygen into the back and enhances microbial activity. Most experienced producers do not till for the first few days after a new load of sawdust. Once tilling does start, a twice-per-day program seems to work the best. Going to once a day incorporation or even less leads to dirty cows and less microbial activity in the pack. Tilling also reduces compaction and provides a comfortable resting area for the cows. We recommend stirring to a depth of 10 to 12 inches for best results. (con't on back)

What's New at the U?

Pilot Project to Evaluate Alternative Bedding: A pilot study to evaluate alternative bedding materials will begin in November at the West Central Research and Outreach Center (WCROC) in Morris, MN. Researchers Jeff Reneau, Marcia Endres, Dennis Johnson, Mindy Spiehs, and graduate student Erika Shane will be evaluating various aspects of four bedding materials: pine shavings, ground corn cobs, chopped soybean straw, and a wood chip mixture that has not been dried. Selection of the four bedding materials was based on preliminary data from lab-scaled studies conducted this summer.

Over a 6 month period, the researchers will collect weekly data on temperature, moisture, pH, compaction, and particle size of bedding material on the compost bedded pack. Particle size and moisture content of the bedding material also will be determined with each new load that arrives at the barn. Samples will be collected from the compost bedded pack on a monthly basis to determine chemical characteristics such as carbon to nitrogen ratio. Bacterial pathogen levels before and after stirring and cow comfort/cleanliness data will also be determined. Milk quantity and quality will be monitored. This data will provide vital information that will help producers better understand how to manage their compost bedded pack, and will provide insight into characteristics that make a desirable bedding material for compost dairy barns.

Outreach to Wood Products Industry: Regional Extension Educators Mindy Spiehs and Mike Reichenbach have been collaborating on an outreach

If you would like to receive this newsletter or want to remove your name from our mailing list, contact Mindy Spiehs at (320) 589-1711 or toll free at (888) 241-4532. If you prefer to receive this newsletter in an electronic format e-mail spie0073@umn.edu.

Fundamentals of Compost Dairy Barn Management (Con't)

Barn Ventilation and Location – In the warm months adequate ventilation is needed to remove cow heat and moisture as well as the heat and moisture generated by the biologically active pack. Sufficient air exchange in cold weather is needed to remove moisture from the pack and extend time between bedding addition. If your compost barn is naturally ventilated, location becomes very important. Build the barn in an open area where summer winds can blow through the structure. Current recommendations show that a 16 foot sidewall is needed to allow for a four foot concrete wall to hold the composted area. The open area above the wall allows for good aeration and space for cleaning and incorporation.

Compost dairy barns are an excellent choice for housing dairy cows because of the excellent cow comfort afforded by these facilities. Sawdust prices have climbed in recent years and currently stand at around $900 for a semi load. However, a recent analysis shows that amounts to around $0.55 per cow per day. Even with ten dollar milk, this amounts to about five pounds of milk to pay for the bedding and the kind of cow comfort that we do not get in other facilities.

Wayne Schoper is an Extension Educator in Brown and Nicollet Counties

What's New at the U? (Con't)

effort to the wood products industry. A ten minute power point presentation about compost dairy barns was posted on a website to be viewed by members of the wood products industry. The purpose of the power point is to educate the wood products industry about the concepts of compost dairy barns, the needs of compost dairy barn producers for a consistent, reliable source of fine dry sawdust and wood shavings, and to challenge the wood products industry to work with producers to find solutions to the increasing difficulty of obtaining wood based bedding materials.

As part of this outreach effort, contact has been made with Keith Jacobson of the Minnesota Department of Natural Resources. Keith is responsible for a quarterly newsletter called *The Marketplace.* Among other useful items, the newsletter has a feature for people looking to buy or sell wood products. Advertising in the newsletter is free. If you would like to view the latest newsletter or advertise that you are looking for wood products, the newsletter is available online at: www.dnr.state.mn.us/forestry/um/index.html.

Compost Dairy Barn Tours:

Now that harvest is almost complete, several people have asked if there are any CDB tours scheduled for the winter months. Currently, no formal tours are scheduled. However, if you would like to organize a tour for yourself or a group of producers that you work with, contact Wayne Schoper or Vince Crary. Schedule tours will be posted on the University of Minnesota Extension Dairy Team website www.extension.umn.edu/dairy.

Frequently Asked Question: Moisture Content of Sawdust and Wood Shavings

Question: Publications from the University of Minnesota say that I'm supposed to use "dry" sawdust in my compost bedded pack barn. How dry is "dry?"

Answer: This a question that the University of Minnesota Compost Dairy Barn Group is researching at this moment. Based on lab-scaled research conducted this summer, we are estimating that most "dry" sawdust contains somewhere between 12 and 16% moisture. According to Extension specialists in the wood products field, dried wood products are very stable at 18% moisture or less. Therefore, at this time, we would recommend not using wood products with a moisture content greater than 18% in your CDB.

Question: Do I need to use kiln dried wood products for my compost dairy barn?

Answer: No, the wood products do not necessary have to be kiln-dried. Some sawdust suppliers dry their wood naturally. The important thing is that the wood product you are purchasing for bedding in your CDB contains less than 18% moisture. If you are not purchasing kiln-dried wood products, it is very important that you make sure you are **NOT** purchasing green or wet sawdust or wood shavings. We know that green wood products do not work in CDB. This product contains too much moisture and will make a wet, sloppy mess in the CDB.

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