

Volume I

November 23, 2005

This Month's Topics

- * Starting a Compost Dairy Barn
- * Can Straw work as a Bedding Material?
- * Producer Thoughts by Kerry Hoffman
- * University of Minnesota update

Ideas? Suggestions?

Welcome to the first edition of 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. This will provide a way for producer to share their experiences and learn from one another. The newsletter is also intended to provide updates on research being conducted and answer frequently asked questions.

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.

Starting a Compost Dairy Barn

I have received calls from some dairy producers that started using their compost dairy barns and ran into problems. After we talked about what they are doing with the pack, a couple of things have come to the forefront.

Do not start the compost dairy barn using green sawdust. Correct moisture content is one of the key factors to make this system work. Starting with green sawdust presents challenges with the moisture content.

Initially you need to start with 18" to 24" of sawdust. This allows you to stir the pack properly without disturbing the dirt floor underneath. Producers that have started with less have had problems.

You need to stir the pack at least twice a day to a depth of 10" to 12". *It is THE key management step* to the whole Compost Dairy Barn concept. This not only removes manure and urine from the bedding surface, it incorporates oxygen into the pack allow-

ing faster aerobic decomposition important to optimizing the composting process. The bedded pack can be stirred using a skid steer loader, with a front mounted adapted cultivator or tines mounted on the front. A few producers have purchased 3 point diggers to go on the front of a tractor or skid steer loader. The 3 point digger does not seem to stir the pack in deep enough.

If your cows are in one location all the time, an area that is too wet and has incorrect carbon to nitrogen ratio will develop. The material from the wet area needs to be thoroughly spread to insure that the manure and urine get mixed throughout the entire barn pack. Once this happens, the cows will spread out in the barn and naturally distribute urine and manure throughout the barn.

Fine wood shavings or sawdust is the bedding material of choice. Fine particles facilitate easier handling and mixing, and speed bacterial growth that increases

temperatures sufficient to inactivate the pathogens. Other types of bedding may work satisfactorily, but more research needs to be done. A semi load of fine wood shavings typically last between 18 and 40 days, before additional bedding is needed.

Hot and humid or wet weather will require more frequent application of fresh bedding. Fresh bedding is added when the bedded pack becomes moist enough for it to stick to the cows after they rise from laying on the bedded pack.

Proper pack management requires twice daily stirring, sufficient bedding, and plenty of ventilation to keep the pack dry. Bedding needs to stay dry for the benefit of keeping cows clean and somatic cell counts low. As with all dairy facilities, excellent cow prep before milking is also necessary to keep somatic cell counts low.

Vince Crary is an Extension Educator in Otter Tail County.

What's Going on at the University of Minnesota?

The University of Minnesota Dairy Team has been busy answering questions about compost dairy barns, especially since the October 25, 2005 article in Hoard's Dairyman (*They're sold on composting bedded pack barns*).

Recently, a group of researchers and Extension Educators submitted a grant proposal to the North Central Region – Sustainable Agriculture and Research

Education program (NCR – SARE) to help us answer questions about bedding alternatives, cow health, milk quality, and the manure nutrient content. Several Minnesota dairy producers currently using compost dairy barns helped prioritize the key issues for this research proposal. Some of these producers will also be involved in the proposed on-farm research trials and field days should the grant be funded.

Members of the Dairy Team and other University personnel have been collecting information from compost dairy barns since last summer. Temperature and nutrient content of the compost bedded pack and cow comfort data have been collected. Look for more information about this in upcoming issues of the our newsletter.

Frequently Asked Question: Can Straw Work as a Bedding Material?

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Question: I was curious if you have any knowledge of people trying barley straw as an alternative to sawdust? Is there any sort of processing that would allow this alternative to work?

Answer:

Compost dairy barns are a relatively new dairy housing alternative and we have many unanswered questions about the barns. The quick answer to your question, no we have not done any research on chopped straw. We are currently conducting one small project and proposing a larger project to help us answer questions about bedding alternatives, cow health, milk quality, and the manure nutrient content.

We are also keeping in contact with producers to continue to monitor how the barns are performing. We have heard about a producer in Minnesota that is using chopped bean straw since August with success. We were told that he chops the straw 1/2 to 3/4 inches long and adds a forage box full once a week. He noticed that it is less dusty than sawdust. His pack is 60' x 92' and houses about 50 cows.

We also received word from a researcher at the Agricultural Utilization Research Institute (AURI) that is working with ground soybean straw. He found it is amazing how course and similar to wood some of the particles look.

Our hypothesis is that small course particles have something to do with why these barns work so well. We think that the lignin content of the bedding may also affect its performance. Pine and spruce have lignin contents around 28%. Soybean straw has about 16% lignin. Wheat straw ranges from 7 to 18% Oat straw is around 14%.

So we cannot tell you at this time if chopped straw will work. If you decide to go ahead and try it, we would be happy to hear how your experience goes.

Answer provided by Dr. Kevin Janni, Extension Engineer, Dept. Biosystems and Agriculture Engineering, University of Minnesota

Producer Thoughts—Kerry Hoffman, New Ulm, MN

Wow, it's been a little more than one year since Steve and I moved into our compost barn. Time sure flies when people are having fun—milk production is up, cell counts are down. How can that not be fun?

Both Steve and I are extremely happy with our decision to move our cows from our 1932 stanchion barn, into the comfort of a sawdust bedding-pack facility.

One of the most glaring things Steve and I have learned throughout the process is that bedding is not going to shrink as much as we first anticipated.

No matter how long we waited,

it never seemed to shrink.

This summer, Steve and I spent one day adding pieces of plywood to the top of the 4-foot high sidewalls. This fall, Steve and I spent a day cleaning sawdust off the sidewalls so the curtains will close completely when the snow finally decides to show up. That barn was so full of sawdust, cows towered above us as we walked by the barn.

After much discussion, Steve and I chose to hire out the job of removing the sawdust from our barn. I don't know, but standing in the middle of the barn, on an almost 6-foot deep bedding pack

seemed overwhelming. We only have a small John Deere manure spreader; I didn't want to be married to that thing for the next several months.

Within 24 hours, the five men hired to clean our barn, had it completely empty, except for a few inches on the clay base. Man, the barn looks huge again!

Steve and I figured the composted manure will save us thousands of dollars in fertilizer costs. With the cost of adding nutrients back into the soil this year, it's a welcome advantage.

If you know someone who 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, please send an e-mail to spie0073@umn.edu and your name will be added to our electronic distribution list.

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