EPISODE DATE: 5/29/12

EPISODE NAME: Improving Water Quality Through the Use of Bedded Packs for Dairy Farming

Today on Across the Fence we're bringing the cows in with a look at a pasture program that will improve soil quality and keeps harmful pollutants out of the waterways. Good afternoon and thanks for joining us, I'm Judy Simpson. Federal regulations require organic dairy farmers to pasture their cows. In a good year, Vermont organic farmers can expect to have their animals out on pasture about half of the year. One of the ways to extend the grazing season is to bring the outside inside and create a covered barnyard. It's good for the cows and it's a good source of fertilizer that keeps phosphorus in the ground where belongs instead of creating problems in rivers and lakes. Across the Fence's Keith Silva tells us more from Highgate.

At 35 feet tall and 60 feet wide, this might be the biggest bed in Vermont.

Guy Choinere VO: “The cows, I think would feel a lot better knowing they’re on a bedded pack than if I tell them they’re actually on a manure pile [laughs].”

Guy Choinere is an organic dairy farmer from Highgate with a herd of about 75 cows.

Choinere /Organic Dairy Farmer, Highgate: “They love to come in here and hang out and of course they’re feeding, but they also like to socialize and relax, sort of the same things they do when their out to pasture so we try to keep the same routine year round.

This covered barnyard allows Choinere to create an indoor pasture where the animals can roam, grab a snack and get a good scratch … more than a cow Shangri-La; this bedded pack is a living, breathing organism.

Choinere: I like to look at this barn as my total fertilizer program. Because really this is also for me a fertilizer factory because it’s producing what I need to grow crops. […] So, I’m trying to support a world here that is living and breathing just like the soil, but yet I need to remember that the cows need to be comfortable and live on this all winter so I can’t let it start composting too early. So, I’m working with my ingredients trying, keeping the balance between bedded pack and compost pile. So I’m trying to control the heat and the amount of air I’m locking in the pack and that helps me with the firmness and keeping the cows a bit more comfortable during the winter months.

Striking a balance between pack and pile means management. Every day Choinere adds hay and minerals and monitors the temperature in order to control the composting process.

The cows will spend about 200 days here from mid-October until mid-May before being put back out to pasture. Pigs are then brought in root the pack and further the composting process. In the fall, Choinere will clean out the barn … by then there will be about 800 tons of material to use as fertilizer on his fields.

Choinere built the barn in 2005 as part of a cost-share with NRCS, the National Resources Conservation Service. The
total cost for the project was $100,000.

Choinere: “Over time I’ve seen that it costs me about $10,000 from beginning to end to maintain and manage this type of system […] That $10,000 you do need to figure every year, but if you look at the building, I think, over time, the building itself isn’t going to cost me much, but at least whatever I spend on the inside I feel is a better return for me as a farmer because it all goes back to the soil.”

For Choinere, the benefits of managing his herd on this system far outweigh the costs.

Choinere: “I’ve seen huge benefits with this building that’s why I love it so much that’s why they love it so much. Just in cow comfort compared to the tie stall that they used to be in most of the time in the winter, coming out here for them is just like going out to pasture. It’s a lot easier on their joints, lot easier on their feet. So they’re laying down really comfortable. I noticed that my vet bills have dropped quite a bit and I know it’s because they’re less stressed. […] So, I’ve seen a lot of benefits and I’ve seen a lot of cost reductions and even though I have seen extra expense in managing this type of a building, but I’ve seen it be offset by the savings through the years.

The return on investment that Choinere receives also benefits the environment by keeping nutrients like nitrogen and phosphorus contained in the soil instead of running off into waterways and Lake Champlain.

Choinere’s system also serves as a model for UVM Extension researchers to get the word out about sustainable methods for managing nutrients.

Jenn Colby: Is that your question, how awesome is Guy? [laughs]

Jenn Colby oversees the pasture program for the University of Vermont Extension’s Center for Sustainable Agriculture.

Colby UVM Extension Center for Sustainable Agriculture: “One of the wonderful things about the bedded pack situation was that we were very much learning alongside him and he’s a wonderful partner to learn with and he respects and appreciates information and he contributes as well so there is this really fantastic back and forth. […] and it’s not that he’s not a busy farmer, he’s a very very busy person and he’s taken some these projects very seriously which then helps us help other farmers and ultimately when I ask him is this something you would do again or has this been useful for you then the answer that he generates is what we’ll be able to use for other farmers and that’s the whole point of applied research. […] we want to do research that is useful for farmers.

The care that Choinere brings to the management of his farm business is as much about a good business practice as it is a philosophy for life.

Choinere: “This is food for your soil. […] we cannot do without the life under the soil we might as well admit it, without it we wouldn’t be here, so I better take darn good care of it. So this building helps me produce food for all the life under the soil. […] It sounds simple, it’s a simple little thing, but you need to concentrate on that and I do on this farm and it’s been working.

Gee Choinere packs a lot of life into a farm that’s been built from the ground up. In Highgate, I’m Keith Silva with Across the Fence.
the animals to be together which is really nice especially in the winter. We're very long winters here so it provides a really excellent quality of life for both animals in the farmers.

Judy.: I would think it would be pretty smelly?

Jenn.: I will that Bryan answer that one. He's the composting expert.

Brian.: It doesn't have to be at 10 and that's when it comes down to the management and how Guy has done so well with it. The biggest thing is moisture I guess that's the number one asset that you want to strive for herd health keeping otters dry and their bodies. Also you need to carbon that mixes with nitrogen that and the manure. That's what generates the overs if there was an abundance of what they were vs. if you have a lot of dry matter. The quick analogy I use is if people are familiar with the old Thai style barn the traditional or horse barn. Smells like manure but it's also a bit sweet and those are carbohydrates and curb and sugars breaking down whereas in a wet dense pack or in a modern Thai style barn you get more of the ammonia smell. That's not true Jur and that's not going to be returned to the soil it's actually going up into the air and volatilizing. The batter packs are also important way to conserve nutrients like nitrogen.

Judy.: Those are some of the chemicals that are spread? We saw Guy in the story spreading some chemicals on pack.

Brian.: Yes this rock phosphate so he adds some additional phosphorus in the form of the rock phosphate. It does drive the packed down a little more but also balances is minerals that will ultimately be applied back to his crop fields.

Jenn.: I was going to say regarding the smell if I was there with Guy the day we did the last video piece and there was a very clear change and smell after he spread the mineral which is the very last thing he does on his daily management practices. It's very interesting and very noticeable.

Judy.: So every day he does this pack treatment?

Jenn.: Twice a day.

Judy.: Twice a day?

Jenn.: Yes he does a bail in the morning and bail in the afternoon.

Judy.: It seems labor intensive but as Guy was saying the payback is tremendous.

Brian.: On a couple levels. He has like he said reduced a vet bills his animals are comfortable and it gives them an opportunity to visually check and inspect as animals so this very familiar with their body condition you can detect any issues so that's another good aspect about that where he can observe his animals and keep a close eye on them.

Judy.: How many farmers in Vermont are using bedded packs to have any idea?

Jenn.: That has been a real challenge to get a good number on. There are a couple of different farm structures. The hoop structure that Guy uses isn't the only way that people are using bedded packs. There are certainly at least 100 of those at this point.

Brian.: That seems reasonable.

Jenn.: We did a study last year where about 20% of the farmers responding to the survey and these are grass based livestock farmers were using abetted pack or some sort of composting process to manage their manure but large truss structures are being used. Former freestyle barns are being used. A very rough estimate would be several hundred of the minimum but we think it might be more and will actually do a research project on trying to assess how many types of bedded pack barns there are.

Judy.: Do you think on a small level this can be accomplished with people who have one are two animals were three or four animals?
Brian.: Certainly. Some of it would just be a pen so people would keep groups of calves or heifers were other livestock in a pen a daily or weekly clean out there just building bedding over time. In the winter setting it creates a nice layer of insulation and that's why Guy beds on twice daily basis to keep that top where dry and clean. Even though the manure is in there he disguises the cows from his manure pile it adds up and keeps a nice fresh layer on top.

Judy.: It keeps them warm in the wintertime as bedding.

Jenn.: It does and I've used that in a very much much smaller version simply a hoop structure to lamb on outside in march. Then a nice warm bedded pack is meant for a very healthy lambs and happy moms.

Judy.: We saw the video and we saw there's a workshop that Guy was participating in. Is that really how these ideas get spread? Farmers have to take a look at how works and figure out how works for them?

Jenn.: I will never underestimate the power of the farmer to farmer method of creating change because really farmers go to other farms to assess whether something will work for them so it's wonderful when there's people like Guy or many farmers we work with their very giving of their time for public events and the typically get a good turnout because there are farmers who don't want to invest in something if it's not going to work for them. Someone can come along and look at Guy's system and say that's great for you I don't think it's going to work for me but they might get some other new ideas.

Brian.: Guy himself went to Jack Laser’s and Butterworks Farm to see the bedded pack that Jack and Anne have run for a number of years so that was a peer to peer learning experience that Guy participated in and now is transferring the knowledge he learned.

Judy.: So Brian maybe you can explain why this is better for the environment than just spreading manure? At the end of the day it still manure it's going on the field but how is it different?

Brian.: Not all manure is created equally and Guy mentioned how this feeds the soil. A lot of that has to do with carbon having fiber in it in the form of the bedding he uses not only wood chips to keep it from getting too mushy at the base that any also uses chopped hay or straw sometimes uses shavings all of those different things are forms of carbon that so can the nitrogen and the moisture so you're conserving all that instead of having to potentially import the nitrogen in the form of granular fertilizer or fossil fuel based fertilizers their coming in the form of conserving and nitrogen and minerals and nutrients that are in the manure. In addition as fertilizer it really is a soil builder. That carbon and fiber is being returned to the soil that builds up its physical structures and provides in a sense habitat for all the soil organisms that do all the cycling. In that sense you're building soil resilience it's more resistant to erosion they can better hold moisture infiltrate rainfall instead of having a runoff and the nutrients nitrogen and phosphorus that are in the soil and the newer are more likely to stay in place on the pasture or hay field or cropland instead of being prone to runoff.

Judy.: Interesting so how can people get more information about you Brian and the work you do?

Brian.: I've had the opportunity to do a lot of different farm conservation and composting projects. I think you have my website.

Judy.: The website it's right there and phone number so people can get in touch with you. And Jenn what about you?

Jenn.: The pasture program was always happy to answer questions. We're not composting experts but were happy to be a resource and connect people to the answers they need.

Judy.: Excellent I want to thank you both for joining us today. That's our program for today. I'm Judy Simpson we will see you again next time on Across the Fence.

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