

Michigan Dairy Review



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Things Your Dad Never Told You about Manure

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If you're like me, you learned a lot from your Dad. On the farm and off, Dad's advice was usually spot on. While we need to embrace those historical lessons, we also need to remember that the world is a lot different than it was in Dad's day. Especially when it comes to manure land application, we need to look for opportunities to save money and improve efficiency on the farm.

Same rations as Dad's?

What goes into a cow determines what comes out. Ration phosphorus (P) inputs rose in the 1970s and 1980s and have since fallen. In recent years, the concern over P limits in manure applications created a renewed interest in lowering P in feed rations. Rations directly impact the P in the manure, and ultimately impact the rate manures should be applied to land. Large farms complying with permits and farms seeking cost-share funds from USDA NRCS in recent years also may have found they needed to reduce P to meet new standards.

The first option must be to consider reducing the P concentration in the ration. Abundant research results now support feeding less P than in past decades. For example, current NRC (2001) recommendations are for ration P concentrations for lactating cows to be between 0.32 and 0.38% of the ration dry matter, depending upon level of milk production.

An easy rule of thumb is that 1 gram of ration P should be provided for each pound of milk produced (Get details in article by Rozeboom and Beede at www.animalagteam.msu.edu/DietModification/tabid/203/Default.aspx).

Do you feed the non-milking herd the same as the milking herd?

Probably not. Those changes also create very different manure output. The milking herd contributes 85 to 90 percent of the total manure P in the farm. Therefore, if the manure from the non-lactating and lactating groups is collected separately, they should be applied to cropland at vastly different rates. Generally, the bedding is also different for these two groups, and that also impacts the rate per acre for manure applications.

The milking herd manure has more nutrients and is generally more concentrated per ton or per 1,000 gallons. It also is more cost-effective to deliver to crop fields with the lowest P soil test. Those fields are probably farther from the manure storage, but when the nitrogen (N) and potassium (K) are also accounted for at today's fertilizer prices, hauling becomes more

cost effective if the nutrient credits are valued and fertilizer applications are reduced accordingly.

Did Dad test manure? Do you?

Sand bedding has changed many facets of dairy production, including manure. There are systems used for settling, separating and storing sand-laden manure. Manure sampling can help determine the location and concentration of nutrients in your system. That determines application rates.

Are you collecting more rain and wash water?

I'm willing to bet that there is more concrete on your farm than there was in Dad's day. From old loafing areas to silage bunkers to driveways, concrete plays a big role in runoff. Dairy farms that fall under the NPDES permit must control and contain this water to be in compliance. All farms are encouraged to divert precipitation BEFORE it reaches manure or feed areas.

Between the storm water, wash water and the sand settling in the storages, there is always some form of watery manure with low nutrient concentrations. But often, the agronomic rates for nutrient needs would require too much volume on the fields, resulting in run-off or liquid manure reaching tile drains. That means having to lower the rates to what the soil can absorb and retain. For more information visit www.animalagteam.msu.edu.

Did Dad teach you about organic and ammonium N?

All manures vary in the amount of ammonium N and organic N. The more N in the ammonium form, the more important to inject or incorporate the manure the same day of application to retain as much N as possible. Analysis of manure samples will provide the percentage of each form of N. Generally, about half of the total N in dairy manure is in the ammonium form and the other half is organic.

On hot, dry days, the ammonium volatilizes into the air and is lost within hours. That's when injection or same-day incorporation is vital. Whenever possible, apply manure later in the fall, when soil temperatures drop below 50 degrees F. This slows or stops the N conversion in the soil, holding more of the manure N in the ammonium form and binding it to soil particles over the winter.

Did Dad use cover crops?

Well, he was way ahead of his time on this one! The two biggest issues to overcome with manure applications are risk of runoff, especially with winter applications, and risk of manure reaching tile lines.

Besides being potential risks for surface water contamination, while nutrients are washed away and become a pollutant the producer is losing money. A cover crop provides a root system to uptake nutrients and stabilizes soil. The roots also create better absorption of manure into the soil compared to a field of stubble after silage harvest. The top growth will reduce runoff.

The entire system puts organic matter back into soils. And, recent research at the USDA ARS National Soil Tilth Laboratory in Ames, Iowa is finding a positive interaction of the manure nutrients hastening the breakdown of the cover crop in the spring and then releasing nitrogen

back to the following corn crop at the peak of crop need. Visit www.animalagteam.msu.edu for more information on rye cover crops.

An opportunity for you that Dad didn't have

If you would be interested in doing plot work with rye, or other cereal grain crops, and manure application this fall, please contact me at rector@msu.edu or (269) 967-6608.

Dad, grandpa and you all know that manure has value. Grandpa valued it because he didn't have fertilizer. Dad became accustomed to convenient and inexpensive fertilizers. That's not the case anymore. Manure has extraordinary value: manage it, credit it and pass the nutrients on to your kids.

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