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# Getting the Most Out of Your Manure

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Crops Team

# Take Home Point

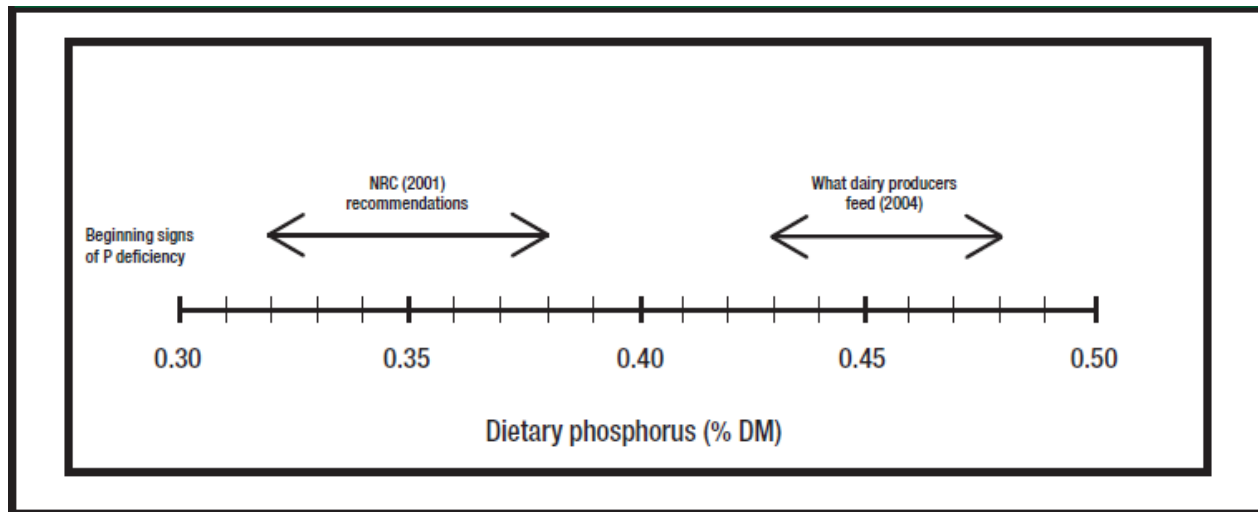
***There are many practical, cost-effective manure management practices can be adopted on farms of all sizes.***

# Outline of Practices

- Feed Management
- Separation Systems
- Covers for Storage Facilities
- Manure Application
- Cover Crops
- Grazing
- Land Swapping

# Feed Management

- **Reduce P** in rations to NRC recs.



- *Why?* Save \$15/cow/year & spread manure on more acres.

# On Farm Example



- Kevin Buttles, a dairy nutrition consultant with Cooperative Services in Denmark, Wisconsin has about **20 farmers** who, for the past 4 to 5 years, have been feeding their cows phosphorus at NRC recommended levels with **“absolutely no repercussions” on milk production and herd health.**
- The only change dairymen have noticed is a positive one—it takes less land to apply manure according to phosphorus limitations.

# Feed Management

- Accurately feed the right amount of CP
- Why? Above~ 16.7% CP, nitrogen goes out the back end in the urine as  $\text{NH}_3$ .



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# CP in Rations

- 1. Regularly test all sources of CP
- 2. Feed both corn silage & haylage along with processed grains—improves rumen fermentation.
- 3. Balanced rumen degraded and un-degraded protein.
- 4. Group cows by milk production and keep DMI high.
- 5. Monitor milk yield when lowering CP.

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# Separating Systems

- Remove manure liquids from manure solids
- +allows for smaller, cheaper manure storage system
- -have to deal with both solids & liquids
- -may not pencil out on a small scale



# Separating Systems

- Roller Presses [Video](#)
- Rotary Screens [Video](#) [Video](#)
- Screw Presses [Video](#)
- Weeping Wall Basin



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# Separated Liquid

- Apply with
  - A giant sprinkler gun
  - Irrigation equipment
  - K-Line pods



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# Problems with manure liquid

- Wrong screen size leads to solids in manure and plugged hoses



- Uneven application & a big stinky mess if not managed properly

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# Separated Solids

- Land apply
- Compost
- Possible use as bedding
- Sell



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# Covering Manure Storage

- Keep the extra water out ~40 in/yr.
- And keep the smell in.
- But it's anaerobic...



# Manure Application

- Bottom line:



- Get it in the ground.

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# Manure Application

- Injection with a drag hose



- Injection with a tanker



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# Manure Application

- Solid manure injection



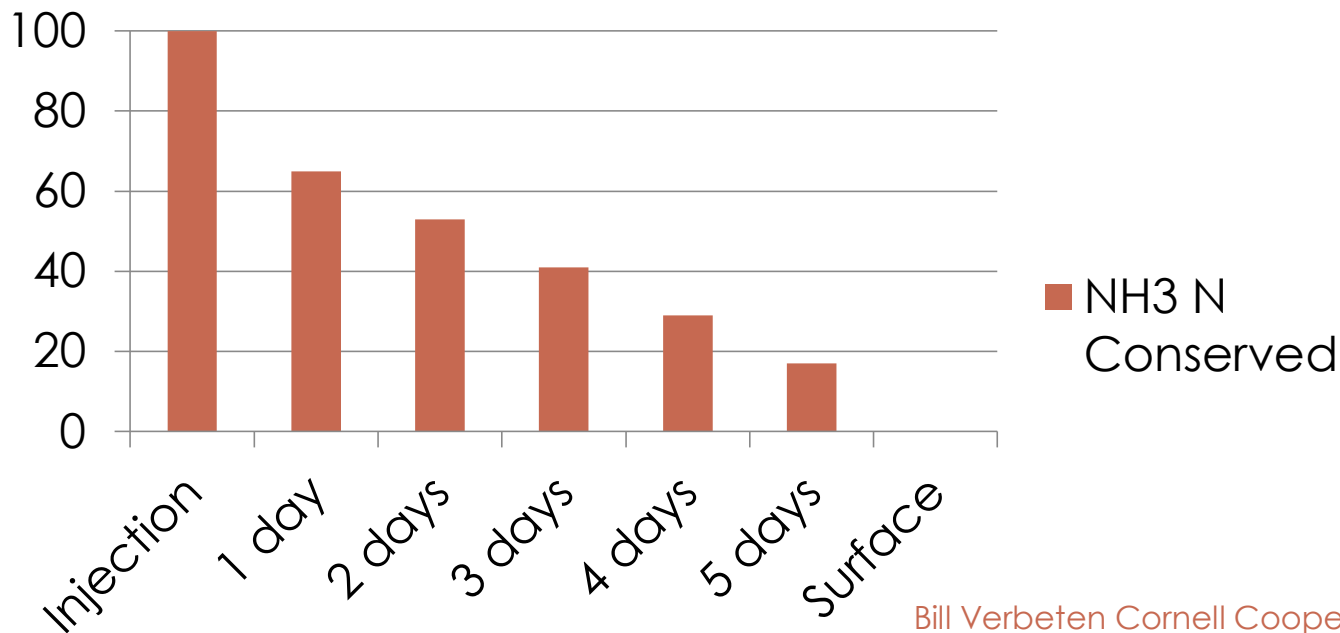
- “The machine creates **eight rows of trenches** that are 2 inches wide, 3 feet deep and about 12 inches apart, using rotating augers to **deposit the litter below the surface and covering the trenches,**” she said. “The augers help break up large chunks of litter into a fine material that is better deposited into the soil. [Ohio State](#)

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# Manure Application

- If not able to inject, till the manure into the ground immediately after application.



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# Cover Crops

- Small grain cover crops can remove 80-120 lb/A of Nitrogen
- Small grains are high yielding, high quality forages.



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# Cover Crops

- In 2013 nitrogen study 1/3 of the fields showed no response.
- Likely due to long-term manure applications.



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# Spread Manure By Grazing

- Rotational Grazing
- Greatly reduces manure storage and handling costs.
- Urine immediately incorporated into the ground.



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# Spread Manure By Grazing

- Crop Stubble, Standing Corn, or Bale Grazing
- 30-40% of manure is from non-lactating cows & heifers that do not need to be confined.
- Same benefits as pastures for manure management.
- Improved crop yields documented in WI & Great Plains



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# Land Swapping

- Manured land is like a bank account.
- Rent it to a vegetable farmer.
- Very common in NY.



# Take Home Point

***There are many practical, cost-effective manure management practices can be adopted on farms of all sizes.***

# Questions?



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