Overview

- Manure
  - Volume
  - Nutrients
- ISS 4 Phase NuWay System
- Digested Example
- Benefits
- Water Discharge Permit and NRCS Grant

The Ins and Outs

- 47 lbs Evaporation
- 160 lbs or 22.5 gallons of waste
- 54 lbs of DM feed intake
- 30.4 gallons water
- Total of 307 lbs into the cow/day
- 80 lbs of milk at 70°F ambient temperature, 9.5 gallons

The Big Picture

- 1000 Cow Dairy Farm in Wisconsin
- 47,000 lbs of evaporation
- 180,000 lbs or 22,500 gallons of waste
- 54,000 lbs of DM feed intake
- 30,400 gallons of water for cows
- Total of 307,000 lbs into the cow/day
- 80,000 lbs of milk, 9,500 gallons

But wait there’s more!!!

What did we forget?

- Milking equipment CIP clean up uses 1-3 gallons/cow/day
- Parlor wash down uses 4-6 gallons/cow/day
- Other (misters/hoof baths/washing towels/special needs) 1-3 gallons/cow/day

Back to the Big Picture

- 180,000 lbs of manure or 22,500 gallons manure
- Additional 9 gallons/cow/day in other areas = 9,000 gallons/day
- Total waste is 31,500 gallons/day or 31.5 gal/cow/day
- In a year 11,500,000 gallons
Issues with Manure
- Volume
- Odor
- Handling Costs
- Liabilities
- PR
- Environment

Follow the Nutrients

Breakdown of Solids/Liquids

Where do the Nutrients go?

The NuWay System

Phase 1 - NuSep
Phase 2 - NuSpin

Filtrate from Phase 1 - NuSep

Manure Solids (Cake)

Phase 3 - NuCleanse

Filtrate from Phase 2 - NuSpin

Removed per gallon
- 100% Suspended Solids
- >99% Phosphorus

Tea Water

Uses
- Irrigation
- Off Farm Sale
- Phase 4 Feed

Phase 4 - NuPure

Tea Water from Phase 3 - NuCleanse

Concentrated Liquid Manure

Clear Water

Summary

Digested Manure

Clean Water

Bedding Solids

Manure Solids (Cake)

Concentrated Liquid Manure

Concentrated Tea Water

Nutrient Breakdown

Digested Manure

- 100% N
- 100% P
- 100% K

Clean Water

30 - 38%

You decide!

Nutrient Breakdown

Digested Manure

- 30 - 38%

Clean Water

31,500 GPD

10,000 Cow Dairy Farm in Wisconsin

Cost per day based on $0.65 N (Urea), $1.14 P (TSP), & $0.75 K (Potash)
What are the Benefits?

Reduced Handling Costs

- Discharge a large portion of the overall volume to a wetland
- Irrigate a large volume in the form of Tea Water
- Move concentrated solids and liquids nutrients to distant fields

Benefits Continued...

Capital Cost avoidance

- With 4 phase system a percentage of the original liquid manure volume can be discharged as clear water or re-used
- Storage costs vary widely from $0.02-$0.10/Gallon for the storage structure
- Tea Water not limited to spring and fall application

Benefits Continued...

Increased Crop Yield

- Irrigation of Tea Water on growing crops increases yield
- Makes it easier to get the correct nutrients in the correct concentrations at the correct time
- Less commercial fertilizer needed

Benefits Continued...

- Chemical free mechanical separation
- Environmentally friendly – “Green” Technology
- Reduced risk of ground water contamination
- Sale of specific nutrients off farm
- Facilitate herd size increases
- Siting compliance
- Odor reduction

WPDES Permit

Permit was issued to Emerald Dairy on 1/22/09!

DNR Comments on Permit

- The Wisconsin Department of Natural Resources (DNR) today issued a state pollution discharge or (WPDES) permit to St. Croix County-based Emerald Dairy allowing the facility to discharge water from its state of the art wastewater treatment system to Dry Run Creek rather than having to landspread it – the current standard practice in the nation.
- “John Vrieze and Emerald Dairy have shown remarkable initiative in advancing water quality protection and manure handling in the dairy industry,” said DNR Secretary Matt Frank. “They are revolutionizing the dairy industry and putting Wisconsin in the national forefront for progressive and environmentally sensitive farming.”
- Remaining solids and liquids from the treatment system will be landspread in smaller quantities than traditional operations, making them less susceptible to runoff.
- “This is a great example of our work with the agricultural community to ensure Wisconsin maintains a strong agricultural economy while continuing our commitment to protect the environment,” said Secretary Frank. “We support the efforts of farmers and the agricultural community as a whole to use technology and innovation to protect the environment and keep Wisconsin’s agricultural economy strong.”