

“Anaerobically Digested Manures”

May 20, 2011

The webcast is archived at:

<http://www.extension.org/pages/58508/anaerobically-digested-manures>

What is the carbon to nitrogen ratio for the Qualco plant digester?

Joe Harrison: We do not have data from this project on the carbon to nitrogen ratio.

What are some typical moisture contents of the anaerobically digested manure?

Joe Harrison: This digester is functioning with a solids inflow of ~ 4 % and a 2.5 % solids out flow. The solids after the liquid-solids separator is ~ 30 % dm.

How do you feel about vegetative buffers to manage the migration of bacterial from the anaerobic digester with prevailing winds?

Joe Harrison: Vegetative buffers are an accepted practice to minimize movement of wind born aerosols. The majority of manure from this study site is injected into the soil.

Are your values from values before digester effluent storage or after storage? What is the impact of storage since all digesters store the effluent for months?

Joe Harrison: In data that we showed today, all values were from anaerobically digested manure that was obtained after it exited the digester and before storage. Data we have collected on bacteria indicate no increased growth of bacteria of manure origin in the lagoon stored anaerobically digested effluent. We are now studying the effect of lagoon storage on the nutrients of anaerobically digested effluent.

Was there any control? What is the pathogen reduction in a "normal" lagoon and how does that compare to digested effluent (the calf barn waste is not an equal comparison)?

Joe Harrison: We have compared normal (undigested manure) and anaerobically digested manure on pathogens, the anaerobically digested manure bacteria counts stays low when stored.

Concerning manure recommendations when applying anaerobically digested manure to crops, are we assuming application at agronomic rates?

Joe Harrison: All our comparisons were when manure was applied at agronomic rates.

Are the digested samples before or after storage? What is the effect of waste storage on nutrient losses (volatilization) and bacterial death?

Joe Harrison: Before, but long term storage keeps bug #s low, we are now characterizing lagoon storage if nutrients now

Is the separator just a screen or a real separator?

Joe Harrison: The separator used at this site when we conducted the study was a commercial screw press separator.

It appears that the injection approach for the manure to the crops will help reduce the amount of ammonia that is volatilized. Is this a correct statement?

Joe Harrison: Limited evidence we have collected so far suggest the subsurface deposition had a limited effect on nitrogen utilization fro crop growth.

Was there a difference in total application gallons?

Joe Harrison: Yes, we focused on a total N basis, not liquid gallons

Why do you think the Urea plot yields were higher than all the manure treatments?

Joe Harrison: More N was applied

What are the typical forage yields for the area, how did your plot yields compare to historic averages?

Joe Harrison: The yields of forage were typical for the region.

Was an analysis done on the total net GHG change? For example, even though there was an increase in N₂O emissions from AD effluent, was the reduction of methane enough to offset that increase?

Joe Harrison: We have not yet completed a total net GHG change.

If I am reading this correctly it indicates a urea nitrogen utilization rate of over 95%, almost twice other reported values. Please confirm.

Joe Harrison: Data refers to % of urea as ammonia not utilization rate

Did you look at ammonia emission from the digester effluent after it was transferred to a lagoon? How would that compare to "normal" undigested lagoon emissions? If you are removing all of the C in the digestion process, it should be higher. How does that support your conclusion that AD reduces N loss?

Joe Harrison: Our efforts to look at the effect of long term storage of manure on ammonia emission are underway. Preliminary data indicate that the ammonia content of the manure regardless of whether or not it is digested is primary factor affecting ammonia emission.

Are there any unique concerns about incorporating food waste in an anerobic digester? i.e. detention times in the digester, moisture content, etc?

Joe Harrison: In Washington post consumer food-waste cannot not be used. Some pre-consumer foodwastes are very digestible and produce methane gas quickly so slowly feeding them into the digester is advised.

What is the sampling frequency over a year?

Joe Harrison: Varied depending on project, weekly, 2x/month, monthly

How do digester pathogen reductions compare to pathogen reductions from other practices such as composting?

Joe Harrison: We didn't take raw manure through just a composting process.

It sounds like there would still be a concern of sharing manure between a community digester for Johnnes. Correct?

Joe Harrison: Yes, use standard Johnnes control measures

Please provide the web site for the AgStar 2011 revisions again.

Leslie Johnson: <http://www.epa.gov/agstar/documents/protocol.pdf>