

Meeting Agenda/Brief Recap and Updates
8pm Monday February 3, 2014



Marion Township Library -Chickasaw, OH

1. **Jim Keller – Welcome, meeting purpose.** The group welcomed Greg McGlinch's Introduction to Agronomy students. The students are participating in Greg's class at the Wright State Branch Campus. They attended a class in the library which preceded our meeting. The students stayed for Kevin King's presentation.
2. **Kevin King – Update – Phosphorus (P) monitoring stations.** Kevin, a member of the Ag Research Service of USDA, updated the group on the status of the monitoring stations he has installed across the state. He has stations in three water sheds: the upper Big Walnut, the western Lake Erie Basin and the upper Wabash, our watershed. His studies were triggered by the algae blooms in Grand Lake and western Lake Erie. Kevin shared the following key points:
 - From the mid 1970's to 1995 P going into the lakes was reduced. It started increasing again in 1995. Due to soluble P, the levels are higher than one would expect considering the amount of manure and fertilizer being used.
 - His stations are designed to uncover the source of soluble P and hopefully why is it increasing since 1995.
 - They use paired fields where the management of the agriculture has been historically the same. He has installed monitoring stations on both the surface and the tile. The sites are designed to provide a "before/after" control impact study.
 - The fields will be monitored through one crop rotation, such as corn – beans - wheat. Then a change will be made in one of the fields. They should be able to see the impact of the changed practice. The change might consist of a surface amendment such as gypsum or the amount/type/timing of manure/fertilizer applied. They are looking for practices that have a positive impact on the water quality leaving the field.
 - Kevin has 34 fields across the state. 8 (4 sites) are in our watershed, the upper Wabash.
 - Kevin discussed the need for tile drainage in our soils. Without tile drainage, farming in this area would be ineffective. Tile drainage is especially crucial at times of planting and harvesting.

Meeting Agenda/Brief Recap and Updates

8pm Monday February 3, 2014

- Kevin's system collects samples, using a predetermined protocol, from both the tile and surface. Tiles continue to flow 200 – 300 days of the year and samples are taken daily. This allows year round quantification of what nutrients are escaping.
- Kevin showed a slide reflecting a "hot" field having 400ppm of P. The heavy concentrations of P are near the top. There is no P at a depth of 18 inches. The tiles in this field are buried at 30 inches. It would appear that P should not escape the field and yet it does due to macro pore preferential flow. (Cracks in the ground to us laypeople) Frank Gibbs performed an experiment, where he blew smoke into a tile and it came up through the soil demonstrating that the ground is not a solid mass.
- This leaching through the cracks seems to be consistent across till or no-till approaches. The water moves across the surface absorbing the P and then down into the tile through the macro pores. Kevin believes that better soil qualities will mitigate this situation.
- Kevin reviewed a study from England that verifies that tiled fields produce less water into a stream than non tiled ones. The tiles pull the water down through the soil allowing the soil to absorb and store much of it.
- Data from the 4 local sites reflect that 5 – 18% of the precipitation leaves the field through the tile. On one site 50 – 60% of the total water volume left via the tile and on another site 90% left via the tile.
- Samples reflect that the P content escaping through the tiles is much less than from the surface. With Nitrogen, more escapes through the tile than from the surface.
- Big rainfalls cause much more P to escape from the surface than smaller rainfalls. The more water that can be held in the field the better the situation.
- Site variation, soil condition, growing season versus non growing season are all variables making measurements a bit challenging. The experiment is just good started so more years and samples will help clarify results.
- Kevin further discussed preferential flow (through the cracks). He has set up some special experiments using water stable isotopes. He measures the isotopes in the actual rainfall, versus the isotopes coming through the macro pores and through more normal soil. He has equipment capable of doing this. The goal is to scientifically trace how water moves and transports P through the soil. The end goal would be to create soil conditions that minimize P loss.
- Kevin spoke about funding and the possibility of doing one more site in our watershed. He'd love to do a wooded lot as a reference point.
- Kevin closed by readdressing the increase since 1995. He brought up a number of factors incorporated into Ag since that date. Items he noted were: weather patterns – higher intensity rainfalls, changing tillage approaches, greater intensity of tiles in the field, more GMO seeds, and herbicides such as glyphosate (Roundup). He feels that we have

Meeting Agenda/Brief Recap and Updates

8pm Monday February 3, 2014

changed the diet of our soil microbes. Not sure how they are currently digesting organic matter and what they are excreting. Perhaps more P since we have most likely modified their biology. Kevin has some funding to analyze the soil microbiology by comparing soil samples from a non GMO field, a wooded lot and a GMO field.

- Kevin finished by noting that this is a very long term study. He does feel that the long term results of the study will provide a much deeper understanding of what is truly occurring with the migration of nutrients, in our soil and water.
3. **Bill Knapke – Latest on Mark Minnix’s Ozonation test site.** Bill received a quote from Mark for a unit to treat a 4,000 head pig nursery. Price was in the \$50,000 – \$60,000 range which is challenging to justify. Bill was not sure where this initiative might lead.
 4. **Gene Marshall – Bio Town visit.** In 2004 Indiana was concerned about the manure in and around Reynolds, Indiana (Bio-Town). They chose to install a plug flow digester. The digester can handle 218,000 gals of manure. Gene visited the facility a year and a half ago. Gene asked about how the effluent coming from the digester was handled considering the high volumes of manure they processed. To address this issue, they are working to incorporate technology from Livestock Water Recycling (LWR). The system was scheduled to be finished but they have suffered schedule setbacks due to weather and start up issues. The digester is working fine. Gas from it powers generators which provide electricity to 1,000 homes. Gene feels that a system such as this would work well locally. The LWR approach separates nutrients from water. Farmers could haul their manure to the facility and use the resulting separated nutrients for their required fertilizer. He will continue to stay in touch with them and arrange a visit as soon as the system is functioning properly.
 5. **Terry Mescher, Bill Knapke, Bro Nick, Jim Keller & group**
 - Separation Technologies – ElectroCell, Pickett Enterprises, Agriment Solutions
 - *ElectroCell* – Terry has not been in touch with them recently. Money is an issue but there are some pending grants that may address required funding.
 - Terry mentioned a company similar to LWR that wants to do a local demo. Preliminarily Terry is concerned about costs.
 - *Agriment Solutions* – Geno Kennedy has forwarded some videos demonstrating how Agriment’s dewatering bags are working effectively in North Carolina. Some local experiments have been conducted using Geo-Tubes. These trials worked very well but proved to be too costly. Bill Knapke and Jim Keller to continue to pursue.
 - *Pickett Enterprises* – Don Pickett advised the group that in a jar test, his product stratified swine pit manure into three layers after about ten days. It has stayed stratified for a couple months. He has met with local swine farmer Jerry Will who will work with Don on a trial.
 - ADAPT test plots - No report.

Meeting Agenda/Brief Recap and Updates 8pm Monday February 3, 2014

- Glen Arnold's manure plots – Glen will be looking for additional folks to participate during the 2014 growing season. Glen applies liquid manure to growing crops and has had positive results. To participate please contact Glen (419) 235-4724, arnold.2@cfaes.osu.edu, or Terry Mescher (614) 395-6210, terry.mescher@dnr.state.oh.us, or Abbey Tobe (416) 586-3289, Abbey.Tobe@mercercountyohio.org.
 - Greenleaf Advisors - Gypsum test plots – Kevin King is working with these folks on one of his sites.
 - Transfer manure out of watershed – Terry Mescher felt there is a considerable amount this occurring. People who need to be rid of the manure have little other recourse. Lou Brown noted that he knows of a livestock farmer who has purchased a truck with a silage bed and a manure spreading bed. This provides him with an effective method for hauling manure out of the watershed.
 - Organic Pond progress – Terry is waiting on some info on their ceramic, P reducing material. Tom Rampe reported that they are still unable to get permission from Fish and Wildlife to net rough fish (carp) in Grand Lake.
7. Updates from the floor – Joe Lochtefeld reported that some aeration systems will be installed in Pullman Bay and on the east bank. These are compliments of local Rotary groups. Joe added that currently there is 5,550 linear feet of tube aeration in the lake. The installations perform well, introducing oxygen, reducing sediment and encouraging very active marine life.

Lou Brown advised that \$500 is available from Top of Ohio. This money will be awarded to a group or individual who will use the money for Ag related initiatives. It would be well for Ag Solutions to apply. Lou will provide the forms necessary to do so.

Lou also noted that Furrow magazine, published by John Deere, had an article on Eco Farming. The article featured folks familiar to Ag Solutions – Jeff Rasawehr and Jim Hoorman. It is a good article detailing practices that would certainly improve our situation. You can read it at: http://www.deere.com/en_US/docs/html/brochures/publication.html?id=22d398a9#26

The county is planning to hire a part time Ag Extension agent sometime in May.

Bill Knapke will forward an invitation from NRCS for a Cover Crop forum to explore opportunities to build soil health. You can attend the forum on February 18th in Celina. Details are included in the body of the accompanying email.

Special thanks to Kevin King who is doing some great work and who was willing to travel a couple hours to share his findings with us.

Adjournment – next meeting date and time 8pm March 3, 2014