

My Summer in Madison County

by Josh Heims, 2018 NRCS Pathways Intern

This past summer I have worked with the NRCS as a soil conservation intern in Madison County. I have learned a lot of interesting things about Madison County and the conservation efforts going on in the county. I've had the opportunity to better educate myself and producers about soil health, learn about the efforts going into reducing phosphorus and sediment into Badger Creek Lake, learn about all the programs helping farmers implement conservation practices into their farm, and I had the opportunity to see rattlesnakes!

The first thing that really jumped out to me was how active and passionate the commissioners were. Their meetings ran for several hours with detailed explanations of different practices being implemented. All the commissioners cared about conservation and helping farmers. I was able to get to know the commissioners and they allowed me to visit their farms and do soil health assessments.

I became interested in soil health a couple of years ago when I started learning about no till and cover crops. It didn't take long for me to be sold that a major way to reduce soil erosion from wind and water was using a combination of no till and cover crops. The following fall in my crop production class I had the opportunity to listen to David Hula talk about his operation. He currently holds the record for highest corn yield in the world (532 bushel/acre). One of the things he talked about that stood out to me was how his farm had not been tilled in 20 years. He said healthy soil was helping him produce healthy crops. This really sparked my interest in how soil health can help farmers reach higher yields.

This summer I decided my project would be measuring soil health and learning more about it by talking with farmers. I really appreciate everyone who gave me the opportunity to come out to their properties and do a soil health assessment. I learned a lot just from visiting with the farmers. I found some good examples showing the difference in water infiltration and soil aggregate stability. The rainfall simulator (at right) shows how well water infiltrates when it rains. The left side is conventional tillage and has a fair amount of runoff with soil in it. The right side is no till with cover crops and has significantly less runoff and less soil in the water runoff. Both soil types are Macksburg A and currently have soybeans growing on them following corn last year. Having better water infiltration pays off in dry years like the last couple. Having more plant available water in the soil for plants to use and capturing more rain on dry years can help boost yields. The increased residue can also help keep the soil from drying out.



Rainfall simulator comparing conventional tillage (left) versus no-till with cover crops (right). Water runoff is collected in the front container.



Another soil health test I performed is called a slake test. A slake test measures aggregate stability. Aggregate stability increases with less tillage and more soil biology. Aggregate stability helps keep soil together and provides pore space for water and air to move in the soil without the soil falling apart and plugging these pores. In the photo at right you can see how in the conventionally tilled field (right side) the soil sluffs off and becomes suspended in the water or sinks to the bottom. This soil would move to the channels created by earthworms and roots and plug them not allowing water and air to move in the soil. The soil that sluffed off on the no till with cover crops field (left side) was in bigger chunks and didn't become suspended in the water.

This summer I also got to learn about Badger Creek Lake and the issues with it. I learned that sediment and phosphorus levels are a concern in the lake. Many practices are being implemented to try to help reduce the flow of sediment and phosphorus. The main practices being used are ponds, waterways, and cover crops. I helped Anna Golightly, Badger Creek Lake Watershed Coordinator, take water samples to measure the levels of sediment and phosphorus at different tributaries to the lake. We performed this once a month and she has been doing this for several years to track the progress being made.

I also got a lot of experience working with grade stabilization structures (ponds) throughout the county. I learned a lot about what it takes to put in a pond. Good clay, lack of limestone, and decent size drainage area are all key factors needed. I found it interesting with how farmers can also use their ponds to water their cattle while restricting the cows from getting into the pond. I liked the idea of using gravity to push water to the waterer placed somewhere below the water line. Using this waterer to water multiple paddocks also seemed really efficient. I was also introduced to tire tanks and found them very effective. I believe they will be something we see more of in the future.



I also went to many training over the summer put on by the NRCS to help increase my knowledge on various topics. I learned a lot at these trainings and about different programs. I attended trainings on windbreaks, mines and minerals, tree identification, CRP, wetland easements, prairie plant identification, resume building, and professional development. These trainings helped further my knowledge on some subjects and gave me a good background on others.

Overall my Summer in Madison County was one full of learning. I'd like to think that I got a little smarter over these three months! I really appreciate everyone who helped teach me different things and let me ask questions. I plan on visiting Madison County in the future!

Thanks again!

Josh Heims