

Big Hollow Watershed Newsletter

Falling from Greatness Continued:

The answer lies in nature. When settlement started in Iowa, the state was covered in a perennial plant community known as the tall grass prairie. This ecosystem is home to many plants, animals, fungi, and micro-organisms. This diverse plant community developed into a complex series of interactions within the soil. Over time, symbiotic relationships developed between the plants, fungi, and micro-organisms. Plants allowed fungi and micro-organisms to live off them and in return the fungi and micro-organisms would dissolve phosphorus and fix nitrogen for the plants to use. This helped develop the most fertile soil in the world. Science has shown that tillage and the lack of diversity destroys the organisms that are responsible for making phosphorus and nitrogen usable to plants.

Using continuous cover and minimal tillage will increase soil fertility, decrease soil erosion, and increase water quality. Minimum tillage and cover crops are truly the future of agriculture and will help Iowa's soil be as great as they once were. Transitioning to a farming system that minimizes soil disturbance with living plants growing year-round can help restore a healthy soil. Using cover crops during the non-growing months will use up any additional nutrients that would otherwise leave the field. When the cover crop is terminated, those nutrients will then be released for the cash crop to use. Cover crops will also keep the soil surface cooler on those extremely hot sunny days putting less stress on the plant and soil communities. This cooling effect along with the increased organic matter will hold more soil moisture during the dry summer months. The continuous cover and minimal disturbance will build soil structure and reduce erosion. So, you won't see walls of soil blowing across the landscape like we saw in the spring of 2023 that were reminiscent of the 1930's dust bowl. If the things that have been mentioned haven't convinced you to switch, then think about the decrease in input costs and increase in revenue that you will see when you let nature mine for unavailable nutrients and convert it into usable forms. Transition to continuous cover and minimum tillage and you will build the soil back to its former greatness.

* If you want to learn more about soil health, please attend the Cover Crop and Grazing Field Day on November 14th. The flyer is on the previous page.

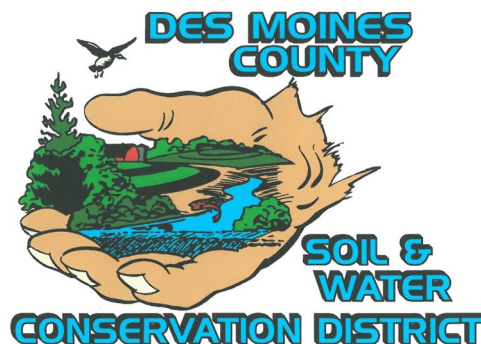
Conservation Partners:



Natural Resources Conservation Service

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News:

November 2023

The annual fall harvest is underway and with that brings the planting of cover crops. Some people have their cover crop seed aerially broadcasted when the grain crop still stands in the field while others broadcast or drill theirs after the crops have been harvested. Regardless of the method, you will start seeing fields of green this fall instead of a sea of brown. 578 of the watershed's 3,193 row crop acres have been signed up to be planted into cover crops this fall. There has also been 79 acres of strip-till signed up to be used next spring. These acres will help improve the water quality flowing into Big Hollow Lake. Water samples are being taken from streams throughout the watershed. The samples are delivered to the State Hygienic Lab to be tested. They are tested for Nitrate + Nitrite, ortho-Phosphate, Total Phosphorus, and Total Suspended Solids. The results will be used to show the impacts that the newly implemented practices are having on water quality. If the water samples start showing a decrease in nitrogen, phosphorus and sediment reaching Big Hollow Lake, then the excess amount of aquatic vegetation growing in the lake should decrease as well.



Other News:

◆ There is a field day scheduled to be held at a Lee County farm on November 14th. Everyone is welcome to attend and the topics will be cover crops and grazing.

The flyer can be found.

◆ The Big Soil Health Event is scheduled to be in Cedar Falls on December 11-13th. This event will provide hundreds of producers, landowners, ag and food industry professionals with an educational experience that encourages and illuminates soil health practice adoption and highlights the benefits to the land, water quality, and human health.

More information about this event can be found at www.agsoilregen.com/bigsoilhealth.

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Falling From Greatness:

By: Frank Boyer

Iowa used to be known for producing record breaking yields but every year there are stories from other states that match or out produce our soils. What happened? Iowa is one of the most modified landscapes in North America and possibly the world. Every road, parking lot, building, lawn, agricultural field, and pasture has changed the landscape from its former native vegetation and transformed it into what we see today.

The tall grass prairie dominated Iowa's landscape prior to European settlement. It had a root system over 10 feet deep and did an excellent job filtering water and holding the soil in place. The ability for the prairie to produce large amounts of biomass was quickly recognized by settlers. Farms, roads, towns and railroads were established across Iowa to take advantage of the highly fertile and sought-after soil. Since settlement, more than 99.9% of the tall grass prairies have been removed from the state and replaced with non-native plant communities and other human developments. All this land modification has had many detrimental impacts on the environment in which we live. Some of these impacts are decreased soil fertility, soil erosion, and reduced water quality.

The year 2037 will mark the 200th anniversary of John Deere's invention of the steel plow. The steel plow made it possible to cut through the prairie's dense root system and make it possible for large scale farming. This expansive transformation took less than 200 years. In that time, we have seen an estimated 50% reduction in the amount of organic matter found in our Iowa soils. This loss in organic matter has decreased the water holding capacity, fertility, and biotic activity in the soil. Every time tillage is used, the organisms that help build fertile soils are destroyed and soil can no longer hold itself together which results in erosion.

Terraces, water and sediment control basins, grade stabilization structures and grass waterways are being used to control the amount of sediment and nutrients that leave the landscape. These erosion control practices work great but are expensive and do not last forever. The problem with these practices is they don't address the cause of the soil erosion and are merely bandages used to slow the erosion. The culprit is reduced soil health. We have countered the loss in soil health by constructing erosion control structures, using genetic research to maximize yield potential, and by adding synthetic fertilizers to the soil.

Anyone who has purchased fertilizer knows how expensive it is and if you could save money on it, you would. Have you ever wondered where fertilizer companies get the nitrogen to make fertilizer? The answer is from the air. The air you breathe is 79% nitrogen and above every acre of land has 70,000,000 pounds of it just floating around free to use. The problem is that it isn't readily available for plants to use. The process the fertilizer companies uses to convert nitrogen into an available form requires a lot of energy and is expensive to accomplish. Something similar can be said for phosphorus. There is anywhere from 200 to 6,000 pounds of it found in every acre of soil. The problem again is that it isn't all available for the plant to use. Since the nutrients needed for plant growth are present but not available for use, farmers are stuck paying other people to convert the needed nutrients into something usable to the plants. Or are they?

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Field Day Opportunity:

COVER CROP AND GRAZING FIELD DAY

**WEBER FARM
1983 275TH ST.
ARGYLE, IA 52619**

TUESDAY, NOVEMBER 14 | 12:00-2:00PM

RSVP BY NOVEMBER 7 | 515.294.2473 OR ILF@IASTATE.EDU



**FREE FIELD DAY AND COMPLIMENTARY MEAL FOR
FARMERS, LANDOWNERS AND CONSERVATION PROFESSIONALS**



IOWA STATE UNIVERSITY
Extension and Outreach



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