CONSERVATION AGRICULTURE

Allamakee County Soil & Water Conservation District

LEOPOLD CENTER

Project Newsletter January 2017

Project Goals

This project focuses on education and outreach regarding several practices that would provide substantial conservation benefits to Allamakee County, but have some economic and knowledge hurdles to overcome to encourage increased implementation. This work was funded in part by the Leopold Center for Sustainable Agriculture. Established by the 1987 Iowa Groundwater Protection Act, the Leopold Center supports the development of profitable farming systems that conserve natural resources. The four focus areas of this project are:

1. Promoting the addition of small grains to corn-soybean rotations.
2. Promoting use of cover crops and no-till on acres that have manure applied.
3. Promoting conversion of marginal cropland to pasture or hay production.
4. Educating landowners and producers about how conservation provisions included in farm leases can help encourage and facilitate conservation practice implementation.

Project Coordinator

Sara Berges is the coordinator for this project. She has worked for the Allamakee SWCD for 7 years. She will be organizing events, working on conservation plans, and providing education and outreach materials. Please contact her by stopping by the office, emailing her at sara.berges@ia.nacdnet.net, or calling 563-568-2246 ext. 3.

Events to watch for in 2017

April—Cover crop and manure field day

Summer—Cropland conversion to pasture field day

August—possible small grain workshop if there is enough interest

Fall—Set up manure and cover crop demonstration site(s). Let Sara know if interested in participating.

Funding Conservation Practices

March 17 is the deadline for second round EQIP applications for FY2017 funding. Several practices have received higher rates than normal for FY17 including many associated with pasture management and some forestry practices. However, conservation plans need to be developed before an application can be ranked, so come in ASAP if you want to sign up.

RCPP Project Approved

We will be receiving Regional Conservation Partnership Program (RCPP) funding which will provide EQIP funds at a higher rate for FY2018 and will follow regular EQIP deadlines. It will likely have a first-round application deadline in fall 2017 for contracts that will be approved for work in 2018. Please stop by this spring or summer to begin the planning process.

Manure and Cover Crops

Cover crops have the potential to provide many benefits for improving soil health, scavenging nutrients, protecting against erosion, and providing livestock feed. They can be used after soybeans or corn, but especially make sense to use on silage ground. Silage ground has minimal surface residue to protect the ground overwinter and from spring rains. Planting cover crops soon after taking silage allows sufficient time for abundant fall cover crop growth, assuming adequate moisture. When taking silage, it is important to make sure to return the nutrients removed in the crop. Manure as a fertilizer source can be used in conjunction with cover crops. The cover crops can help to capture manure nutrients to minimize nutrient losses. There will be a field day this spring to showcase different farmers who are utilizing cover crops and manure on their farms using different seeding and manure application methods. This event will likely be towards the beginning of April. Postcards will be sent out as the event nears and information will be printed in the Waukon Standard, the Allamakee SWCD website, and other local resources.

There are many different methods for applying manure with cover crops. One method developed by Michigan State University is called slurry seeding. It involves mixing the cover crop seed directly into a manure tank equipped with an agitator and applying the slurry of manure and seed with a low-disturbance tillage tool (rear-mounted rolling tine aerator). This method allows for the manure and cover crop to be applied in a single pass, resulting in time and fuel savings. The spacing between the tines in the Michigan State setup was 7.5". This system applies the manure at a shallow depth, which is necessary for cover crop growth. Many manure applicators locally have too wide of a spacing to work with this method or apply the manure too deep for the cover crop to grow. However, if anyone has a manure applicator that could attempt this, please contact the Allamakee SWCD because we have funds to help set up a trial plot.


Photo Michigan State University

One issue people have when considering manure on cover crop acres is that producers want to apply manure later in the season, when the soil has cooled to minimize nitrification and leaching loss, and cover crops have to be seeded by October 21 to receive cost-share. One way to make these issues work is to inject manure into a growing cover crop. The cover crop can be seeded immediately after crop harvest, especially after silage harvest, and the manure injected later. Iowa State

University has done some research on this method in the past and found that the injection bands have reduced growth, but that it does not reduce the overall aboveground biomass.


Rye/oat cover crop in spring.ISU

Cover crops can be broadcast or drilled after manure application. This method has greater potential for nutrient loss while the cover crop is getting established when compared to applying manure to an established stand. However, this can work for solid, liquid, or slurry manure application as long as the cover crop is seeded early enough to allow for some fall growth. Surface applied solid manure can even work with this method if the manure is applied in a thin layer. Broadcast cover crop and surface applied manure can be incorporated using a shallow tillage tool. Rye is fairly forgiving of seeding depth and tends to work best for this method.

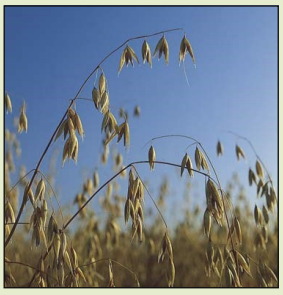

Rye cover crop seeded into bedded pack manure. Photo shows fall growth a few weeks after seeding.

Full-width tillage should not be completed after the cover crop has started growing as this would likely kill the growing crop. Cereal rye grows well in Northeast Iowa and provides many benefits including nutrient scavenging, soil building, erosion fighting, weed fighting and quick growth. Other small grains can also grow here, but should be winter-hardy species like wheat. Cover crop mixes can be used to achieve specific goals, but the majority of the mix should be made of a small grain to protect against erosion.

If you would like to receive cost-share to try cover crops, the next EQIP application deadline will be March 17. The EQIP Rate for winter-hardy single species cover crop is $41.39/acre and the rate for multiple species cover crop is $48.60/acre. Funding will also be available for cover crop use with manure through the RCPP project for FY18 (to be planted fall of 2018). If you are considering this option, please stop into the NRCS office this summer or early fall to discuss options.

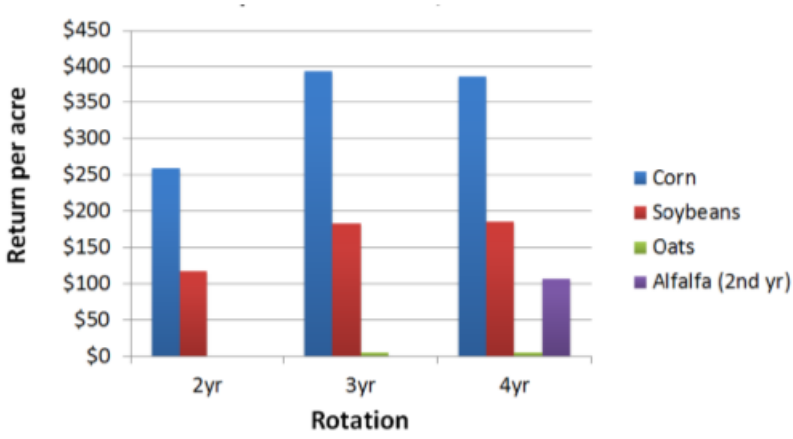
Adding Small Grains to a Corn-Soybean System

There are many benefits to adding small grains to a rotation. They have lower input costs due to reduced fertilizer, herbicide, and pesticide costs when compared to corn or soybeans. Planting small grains also helps to diversify farm income and spread out labor throughout the year. By adding diversity to the cropping system, there is the potential to increase soil health. Small grains can be used for feed on the farm, sold locally for feed, sold to a miller (such as Grain Millers), or used as cover crop seed.



Iowa State University has conducted research for many years comparing the economics and yields of three different cropping systems: a conventional 2-year corn-soybean rotation; a 3-year corn, soybean, small grain/red clover rotation; and a 4-year corn, soybean, small grain/alfalfa (x2) rotation. The 3 and 4-year systems essentially replaced fossil fuel energy with human labor and knowledge. But, how did the diversified rotations (focusing on the 3-year rotation) compare economically with the 2-year rotation? Even though corn and soybeans were grown less often in the 3-year rotation, their yields were often a bit higher. In order to understand the actual economic value of adding a small grain to the CB rotation, the entire 3-year rotation must be evaluated. The revenue was less the small grain year, but the net return over the 3-year rotation ended up being similar to the CB rotation. The small grain year not only had reduced input costs for that year

but also reduced input costs for the subsequent corn year. This was due to red clover supplying some of the nitrogen and the small grain breaking up pest and weed cycles leading to reduced herbicide/ pesticide needs.



Johanns, Ann M.; Chase, Craig; and Liebman, Matt, "Energy and Economic Returns by Crop Rotation" (2012). *Leopold Center Pubs and Papers*. 193.

There are obvious hurdles for many producers such as the knowledge of how to grow a high-quality small-grain product that could be marketed as food grade, when/if to apply fungicides, availability of equipment, and availability of storage. If the product needs to be cleaned for a food-grade market, there are few businesses around that provide this service. There are still some producers who have old seed cleaners, however they may not have the time to utilize them for other producers. The only way to overcome some of these hurdles is to have farmers actually grow more small grains here, even on small 10-15 acre plots to start with in order to gain more knowledge about how to grow a high quality product. Also, producers need to work together to know what equipment is available locally for custom work and to glean information from producers who have been successful at growing and marketing small grains. A workshop was held in August 2016 where presenters talked about how to successfully grow and market small grains. **If there is enough interest, we will work to have another workshop this year. Let Sara know if you would be interested in attending and any specific topics you'd like to learn more about.**

EQIP Funds are available for adding small grains to a rotation. However, we don't currently know what the cost-share rate will be for the RCPP project. The current rate for EQIP cost-share is $4.37 per acre, however, we are trying to secure a higher rate for the RCPP funds.

Cropland Economics: Pasture and Other Alternative Land Uses

If we look at the production value (or yield) of each acre of crop ground, are there acres that consistently operate at a loss? Yield maps can help identify these areas. It is not surprising to producers that there are many fields and many soil types in Allamakee County that do not produce a profit. In this part of the state, many soils are steep and shallow and literally do not pay to plant to corn or soybeans due to consistently low yields, especially on rented fields. The soil itself can be the limiting factor in the potential yield. Additional fertilizer or increased plant population will not be able to exceed the soil's capacity for yield and will simply result in increased economic loss. Soil tests are very important in helping producers determine where fertilizer is most needed and areas that have sufficient nutrient values. Now is the time to evaluate input costs and may be the time to consider alternative land uses for those "unprofitable" acres.

Using available ISU Extension publications (Estimated Costs of Crop Production in Iowa – 2016, File A1-20; fertilizer rates from A General Guide for Crop Nutrient and Limestone Recommendations in Iowa, PM1566), crop budgets were created to look at the potential

profitability of continuous corn production on many "marginal" soils in Allamakee County. We compared common soil types that are frequently cropped. Obviously there were several assumptions and generalizations that were included in the evaluation such as using the CRP soil rental rate as a surrogate for cropland rental rate, using yield data from the NRCS Soil Survey, and using ISU cost estimates in place of actual production costs. An estimate for the average calendar year corn price of $3.41 was taken from ISU publication A2-11.

Corn price $3.41[1]	Soil Type	Soil Map Unit	Corn Yield[2]	CRP payment	Break-even corn price[3]	Profit/loss per acre[3]
Cont. corn	Fayette silt loam	163D2	197	$235	$3.78	-$71.53
	Village silt loam	837D2	158	$219	$4.49	-$168.73
	Dubuque silt loam	703D2	131	$175	$4.96	-$202.61
	Nordness silt loam	499D2	98	$149	$6.19	-$271.91
	Paintcreek silt loam	912D2	100	$175	$6.34	-$292.14

[1] From ISU publication "Iowa Cash Corn and Soybean Prices – A2-11, January 2017"
[2] From NRCS Soil Survey
[3] Calculated using ISU publication "Estimated Costs of Crop Production in Iowa – 2016, File A1-20"

Fayette (163D2) is one of the most common soil types in Allamakee County and is often considered one of our "better" soil types, but our analysis still shows a potential loss. When we look at the shallower soils like Dubuque (703D2) and Paintcreek (912D2), the losses are even more substantial. The steeper soils (E, F, and G) slopes have even lower yields.

One alternative could be converting part of the field (or all of it) to pasture or hayland. The federal EQIP program can help provide financial assistance to cover some of the costs. Many of the pasture practices received a higher-than-normal EQIP payment rate this year. Keep in mind, however, that fencing and some other practices have a 20 year maintenance length. If you have interest in cropland conversion through EQIP, contact the NRCS/SWCD office to start the planning process. This process includes evaluating a Pasture Condition Score; designing watering tanks, pipelines, and heavy use areas; and using a Forage Balance Worksheet. Funds would be available for work to be completed during the 2018 crop year.

Another alternative land use is CRP. It likely would result in an economic benefit on those acres because there would be a known soil rental rate that would be consistent for the length of the contract. However, there are currently limited practices available for CRP and very limited acres nationwide. Another alternative land use would be planting a small grain crop on those acres due to lower input costs and many other added benefits. Currently, most agricultural markets are not very profitable, but diversifying operations allows a producer to spread out risk and take advantage of different markets.

Including Conservation in Farm Leases: Understanding the Value of Conservation

Many farm leases are still hand-shake, verbal leases. Written leases are encouraged because they allow both parties to write down the terms of the agreement. This reduces the likelihood of confusion later because none of us have perfect memories. In addition, many landowners have several renters and many tenants rent from several landowners. Written leases also protect both parties should something happen to either party during the lease term.

The economic value of cropland is largely based on its ability to produce a crop. Good conservation practices help to protect against erosion, improve soil health and fertility, and help to ensure that the land will be able to continue producing a crop long-term. The benefits of

conservation practices are fairly evident for the landowner; their investment will be protected. It doesn't take too many years of large rainfall events like we've been getting the past few summers to highlight areas that would benefit from additional conservation. Many of the soils in Allamakee County are steep and shallow, making them challenging to farm. The reality is that measures need to be taken to protect these soils, such as waterways, headlands, no-till, cover crops, terraces, buffers and many other practices. Past farming practices have left us with soils that have already lost much of the topsoil. We cannot change how farms were managed in the past, but we can choose to utilize practices that minimize soil loss and help build soil fertility and soil health.

Good conservation can not only protect the soils we are left with, but also has the potential to build them up (over time). Many practices, such as no-till and cover crops, take several years to have much impact on soil health. Year-to-year leases can make it difficult to focus on protecting the long-term productivity of the land through practices like hay strips or buffer strips that take several years to recover some of the costs of establishment. Therefore, longer term leases have the potential to encourage these practices. By improving the quality of the soils, the tenant also benefits because crop yield and quality generally improves due to soils having greater water holding capacity, improved organic matter, and reduced erosion.

Open communication between landowners and tenants can ensure that the land is being managed the way both parties would like. Obviously there are some practices that not all tenants are set up to do (like no-till), but they can work together to reach an agreement for the common goal of protecting the land. There are several cost-share options (federal EQIP, state cost-share, state buffer initiative, CRP, etc.) for conservation practice installation. Landowners may be willing to reduce rent or have longer leases for tenants who they feel are taking good care of their land. Conservation provisions can even be included in farm leases. One of the easiest ways to do this is to update the NRCS conservation plan, attach it to the farm lease, and include a provision making the plan part of the lease document. For more information on how conservation can be included in a farm leases, please contact Sara at the SWCD office.

For project news, application deadlines, and Allamakee SWCD/NRCS news, visit our website at:

Allamakeeswcd.org

Reminders:

- **FY17 EQIP deadline for applications is March 17**
- **Contact the office this spring/summer if interested in the special RCPP funding to get the planning process started**
- **Contact Sara if interested in participating in the manure and cover crop trials**
- **Contact Sara if interested in attending a small grain workshop—one will be set up if there is enough interest**