Farmer-Led
WATERSHED COUNCIL

LEADING BY EXAMPLE:

2015 Wisconsin Farmer-Led Watershed Council Annual Report

Project Mission: To improve water quality in the St. Croix and Red Cedar River Basins by developing farmer leadership for increased on-farm conservation.

Content provided by Julia Olmstead

BACKGROUND:

The Wisconsin Farmer-Led Watershed Project began in 2013 as a collaboration between farmers, UW–Extension, and state and county government agencies to improve water quality in the St. Croix and Red Cedar River Basins. Currently, we work with farmers in four sub-watersheds, one each in Dunn, Pierce, Polk, and St. Croix counties. Our model is based on the idea that when farmers are engaged as partners and leaders in the efforts to reduce agriculture's impact on water quality, we get better, more sustainable results over the long term.

Our watersheds (each around 20,000 acres) are all contributors to TMDL areas in NW Wisconsin. After an analysis, these watersheds were selected as those having the best chance of success for projects that lead to conservation practice adoption and ultimately, water quality improvements. The project team believed that established farmer-leaders and existing strong relationships between farmers and county conservation staff were critical for that success.

We have one full-time project coordinator - a UW-Extension specialist - and four conservation planners (one in each county) that each dedicate 50% of their time to the project. We receive additional support from UW-Extension ag agents and specialists, the WI DNR (our primary funder), Wisconsin Farmers Union, the McKnight Foundation, NRCS, and many local co-ops and crop consultants.

GOALS:

Our work to-date has focused on data collection to create a baseline for phosphorus movement in the watersheds; education for farmers and all project partners on topics related to water quality, soil health, and climate change; and conservation incentives created by the farmers to encourage greater adoption of conservation practices.

In the past year, we've developed an on-farm research program to test no-till and cover crop scenarios in our part of the state, cost-shared the construction of thousands of feet of grassed waterways, offered soil health testing and education, and held dozens of meetings, seminars and field days with farmers focused on conservation, water quality, and soil health. **Our primary purpose is to work in partnership with farmers to find effective, efficient, and adoptable solutions that improve both water quality and farm performance.**

2015 IN THE WATERSHEDS:

Each watershed council began the year with $12,500 in available funding to use as the farmers saw fit. For all groups, this money was spent in a combination of ways, including for watershed-wide conservation incentives and for field days and other outreach activities.

DRY RUN CREEK:

The Dry Run Creek Farmer-Led Watershed Council began meeting in 2013. The watershed consists of 18,000 acres with several large farms and a combination of cash crops and livestock. There is one Confined Animal Feeding Operation (CAFO) in the watershed.

In 2015, the group offered three incentives (a copy of the incentives letter sent out to watershed farmers can be found here: https://blogs.ces.uwex.edu/wflcp/files/2016/05/2015-dry-run-incentives-list.docx):

- $1.35/ft. grass waterway cost share
- No-cost Haney Soil Health Test sampling (see "Haney Test" sidebar)
- $40/acre for cover crops

As in past years, the incentive sign-ups were entirely for grass waterways. The Dry Run Creek watershed trends toward long, moderate slopes that are prone to ephemeral erosion, so farmers rightly perceive a high need for the erosion prevention that a grass waterway can provide. In 2015, 8,888 feet of grass waterways were cost-shared.

HAY RIVER WATERSHED:

The Hay River Watershed Council began meeting in 2013. Much of the 26,493-acre watershed is moderately to highly sloped land. Many farms here still have livestock (all but one of the council members has livestock on their farm), which is becoming less prevalent in other watersheds.

The group is very interested in soil health, and in 2015, the group offered two incentives to watershed farmers (see the list here: *https://blogs.ces.uwex.edu/wflcp/files/2016/05/2015-hay-river-incentives-list.docx*):

- No-cost Haney Soil Health test sampling
- $4/acre for soil samples

Farmers signed up for 16 Haney test samples (see page 5) and 34 acres of regular soil samples.
The Hay River Watershed council also participated in the on-farm cover crop and tillage test plot project (see sidebar: On-Farm Research Trials on page 5). Farmer host Ben MrDutt planted an 18 acre field using the replicated test design to test, side-by-side, the effects of tillage vs. no-till on corn performance and soil quality, and cover vs. no cover on subsequent yields and soil biology. This was the first year of a multi-year project.

HORSE CREEK WATERSHED:

Meetings of the Horse Creek Watershed Council began in early spring 2013. The watershed consists of 40,435 acres, with declining livestock numbers. Most of the council farmers grow cash crops.

In 2015, the council offered the following incentives (which can be viewed here: *https://blogs.ces.uwex.edu/wflcp/files/2016/05/HC-letter-Feb-2015-Incentives.pdf*) :

- $2/acre for phosphorus indexing
- $4/acre for soil sampling
- No-cost Midwest Labs soil health analysis (including the Haney Test)
- $25/acre for cover crops
- $100 cash payment for manure spreader calibration
- No-cost cornstalk nitrate testing

Farmers signed up for 292 acres of phosphorus indexing, 1,134 acres of soil samples, 200 acres of cover crop cost-share, one manure spreader calibration, one cornstalk nitrate test, and three soil health tests.

The Horse Creek Watershed also participated in the on-farm cover crop and test plot project (see sidebar). Farmer host Timm Johnson and operator Scott Carlson planted a 3-acre field using the same (albeit smaller) test design as in the two other participating watersheds. The Horse Creek council held multiple field days at the site of the test plots with strong attendance.

Polk County conservation planner Eric Wojchik has been tracking cover crop acres in the Horse Creek Watershed, as the council has pushed hard to encourage watershed farmers to try cover crops. In the spring of 2015, there were approximately 591.1 acres planted to cover crops. With total watershed row crop acres estimated at 11,571.78 acres, this is 5.1% of the cropland.

In spring 2016, we found 1,003.2 acres of cover, which is now 8.6% of the total acres. This is a 3.5% (412.1 ac) increase in the last year.

SOUTH KINNI WATERSHED:

The South Kinni Watershed Council has been meeting since 2013. Originally the "Rocky Branch" watershed council, in 2015 the group expanded to include the South Fork of the Kinnickinnic River and changed the council name.

In 2015, the group offered the following incentives:

- A $250 cash payment for a no-strings-attached conservation walkover
- $1.35/ft cost-share for grass waterway construction or repair
- $4/acre for soil sampling

Farmers signed up for 10 conservation walkovers, 3,010 feet of new grass waterway construction, and 260.7 acres of soil samples.

The South Kinni Watershed Council also participated in on-farm cover crop and tillage trials. Host farmer Brad Peterson planted a 26 acre field in the same test plot design as in the other locations. See the sidebar for more information.

SIDEBAR

HANEY TEST:

The Haney Soil Health Test is a new way of assessing soil condition and nutrient availability, developed by NRCS scientist Dr. Rick Haney. The test attempts to mimic field conditions in the lab. Rather than using chemical extractants to assess nutrient content in the soil (N and P levels, for example), the lab uses a multiple-step procedure of wetting and drying the soil as happens naturally in the field.

The methods use nature's biology and chemistry, in that, the soil analysis is performed using a soil microbial activity indicator, a soil water extract (nature's solvent), and H3A extractant, which mimics organic acids produced by living plant roots to temporarily change the soil pH thereby increasing nutrient availability. These organic acids are then broken down by soil microbes since they are an excellent carbon source, which returns the soil pH, to its natural, ambient level. The Haney Test doesn't measure just one thing to arrive at the plant available NPK, we use an integrated approach. For example, if the Solvita® number is 80 ppm CO2 and the organic C: organic N ratio from the soil water extract is above 20:1 we credit no N or P mineralization, as the C: N ratio decreases we credit more release from the organic N and P pools based on CO2 and the lower C: N ratio. For soil with high CO2, low C: N and a high soil health score, we add an additional calculation from the organic N pool, however, we do not credit more N release than we can measure from the organic N and organic P pools.

From Ward Laboratories (http://www.wardlab.com/haney/haney_info.aspx).

The Haney Test gives farmers nutrient application recommendations that can be lower than standard university recommended levels if the soil tested has high levels of microbial activity. In essence, with strong soil health and a strong microbial community, more nutrients are available to plants. The test also gives the farmer a soil health number, an assessment that can be tracked year-after-year to see whether the field is improving. These numbers can help the watershed farmers track soil health improvements that they may see through increased use of cover crops, decreased tillage, and crop diversity, among other practices.

We are hoping to continue using and learning about the Haney Test as a tool to strengthen our knowledge of soil health and the connection between conservation, soil health, and farm productivity.

ON-FARM RESEARCH TRIALS:

In 2015, the Farmer-Led Watershed Council Project was awarded a grant from the USDA Sustainable Agriculture Research and Education program to do on-farm cover crop and research trials in partnership with the watershed farmers. As a project, we've discovered that local examples of conservation practices are the best learning opportunities that we have. This grant lets us test different cover crop and tillage practices on corn and soybean rotations in three of our watersheds. The test plots also serve as a great location for field days.

Methods:
In each of the three test sites we are testing the same five treatments:

1. No-till without a cover crop
2. Conventional till with a cover crop
3. No-till with a cereal rye cover crop

4. Conventional till with a cereal rye cover crop
5. No-till with a mixed-species cover crop

These treatments are replicated three times at each site, which means each of the test fields has 15 different plots. Last year, the first year of the trial, all three farmers grew corn for grain. This year they're planting soybeans. All three fields were previously tilled, so last year was the first year of no-till for those plots. Cover crops were planted into standing corn.

We are collecting both agronomic and ecological data, including yield, plant populations, soil moisture, residue cover, soil respiration and soil compaction, among other measures.

Results:
In year one (which had no cover crop effect since the cover was planted in the fall), we found only a few differences. Crop residue levels were significantly higher in the no-till fields, as was soil moisture. Yields in no-till plots were slightly lower than in the tilled plots, which is consistent with other research and local experience in early no-till systems.

Data collection and analysis will continue in 2016.

STEPL:

In an effort to measure progress toward our goal of reducing phosphorus runoff into surface water, we have begun using the Spreadsheet Tool for Estimating Phosphorus Loads (STEPL), a model developed by the Environmental Protection Agency. STEPL allows a user to input watershed data about the land base, local soils, cropping practices, animal units, septic systems, and many other factors, and then to calculate nutrient and sediment reductions from the installation of best management practices (BMPs) like cover crops, grass waterway construction, reduced tillage, etc.

We are still working to collect the numbers we need in each watershed, but we have begun to get estimates of the impact of our work, based on this model (which is, of course, based on assumptions and therefore only a rough estimate).

In the Dry Run Creek watershed, the STEPL model indicated that from the start of our project in 2013 through the end of 2015, the BMPs associated with the project have resulted in a 496 lb/year P reduction, equivalent to a 1.5 percent reduction.

In the Horse Creek watershed, the model indicated a reduction of 4,705 lb/year of phosphorus, equivalent to a 12 percent reduction.

Model outputs for the South Kinni and Hay River watersheds are forthcoming.

INFORMATION:

For 2015, Julia Olmstead was the UW-Extension Watershed Project Coordinator.

For current information about the project, visit our website at *blogs.ces.uwex.edu/wflcp* or contact Ken Genskow, UW-Madison/Extension, kgenskow@wisc.edu

ENVIRONMENTAL RESOURCES CENTER

UW Extension
University of Wisconsin-Extension

An EEO/AA employer, University of Wisconsin–Extension provides equal opportunities in employment and programming, including Title IX and American with Disabilities (ADA) requirements.