



Lower Pipestem Creek Watershed Project

A cooperative effort of the Stutsman, Foster and Wells Soil Conservation Districts.

December 2007

Watershed 319 Program Partners with Save Our Lakes Program

The Lower Pipestem Creek Watershed Project has been in the process of installing Riparian Buffers on Hidden Creek, a small tributary to the Pipestem Creek, southwest of Buchanan. The program involves the landowners in the stream area installing and maintaining conservation practices such as fencing, tree planting or other vegetative enhancements, and managed grazing and haying. The 319 watershed project has been able to partner with the North Dakota Game and Fish Departments Save Our Lakes Program (NDGF SOL) for 100% of the cost-share. This has resulted in having the producers in the program receiving reimbursement for the total costs of installation of practices as well as easement payments up front for 30 or 50 year easements.



Establishing Riparian Area

The easement payments from the NDGF SOL are based off of current rental rates as taken from the North Dakota Agriculture Statistics Publication from USDA's National Agricultural Statistics Service. For instance if a stream area of 20 acres is pastureland then a landowner would receive \$15.40/acre for each year of the easement. If this was 30 years, the landowner would receive \$9,240 total easement payment for the 20 acres. If the easement is for 50 years the landowner would receive \$15,400 total easement payment for the 20 acres. Landowners or renters are able to graze this area for 30 days every 3 years and hay every 2 years for vegetation management. The grazing and haying, though, cannot occur on the same year.

Since the purpose of this program is for stream and lake water quality, the easements do not have public hunting access requirements. The landowner does have the choice of vegetative establishments as well, tree plantings are not a requirement of the program. Currently, the easements and cost-share are limited to a 5 mile radius around the Pipestem Reservoir. Watershed project and SCD staff are also working on establishing a program to expand its coverage upstream.

Lower Pipestem Creek Watershed Project Funding Extended

The Pipestem Creek Watershed Project cost-share funding has been extended until the year 2010. The extension will help to continue to fund projects such as grazing systems and water developments, feedlot updates, nutrient management planning, grass plantings as well as many other cost-shared items.



Established Riparian Area on tributary to
Pipestem Reservoir

From the Coordinator: Use of Land Aerator on Expired CRP

This fall a demonstration was held to view the land aerator in Eddy County. The land aerator was purchased by the Eddy County Soil Conservation District for rent by area producers. Basically it's a large land roller (similar to the land rollers most of producers have used for soybeans, etc.) with approximately 4 inch by 4 inch blades attached to the roll cylinder. During the demonstration, the roller was shown to have several applications including:

- 1) Smooth out alfalfa and hayland and enhance vegetative growth.
- 2) Smooth expired CRP for future crop seeding, instead of plowing or disking the ground.
- 3) Smooth pastures, reduce woody vegetation growth (such as silverberry and snowberry), and enhance grass growth. It may roll over larger trees depending on size, such as volunteer siberian elm which may spread in CRP. These species may grow back, but aerating combined with herbicide should take care of the problem.
- 4) Smooth no-till fields which have been infested with burrowing animals.

Some area producers signed up this fall and next spring to smooth expired CRP for seeding next year. This fall an operator actually ran the aerator who is a producer from Eddy County. The cost included \$5.00 per acre for the roller, \$5.00 per acre for the operator and tractor, and the landowner provides the diesel. Producers who have used this on expired CRP have saved much time and expense in tillage operations. The aerator will also save in soil erosion and soil structure for future no-till production.



Cover Crops and Nutrient Availability

By: *Paul Thompson, Area Agronomist*

Nitrogen is the most difficult nutrient to manage in agricultural systems. It is necessary in large quantities for adequate crop growth and yield, but it is also extremely mobile in soil. Planting a non-leguminous cover crop after main crop harvest can "trap" leftover, residual soil nitrogen through cover crop uptake. This **reduces the potential for leaching losses** through the winter months. Cover crops used in this way are sometimes called catch or trap crops. Additionally, the cover crop utilizes excess water in the soil, which also helps limit leaching. Farmers have used cereal grain cover crops like winter wheat and rye to keep soil nitrogen from leaching during the winter. If planted early enough in the fall, they can take up and recycle nitrogen for the following crops. This is nitrogen that might be lost or otherwise contaminate groundwater through leaching. The N-fertilizer equivalency of non legume cereals, such as oats, rye, wheat, and barley, is low or negligible due to a lower N content and higher C:N ratio, which often results in the tie up, or immobilization of N

during the cropping season. These non-legume species may not contribute nitrogen to the crop immediately following the cover crop, however they play an important role in scavenging nitrate nitrogen from the soil that may be lost to leaching.

Leguminous cover crops, such as hairy vetch and clover, can "fix" significant amounts of nitrogen for use by following crops. Through a symbiotic association with the legume, Rhizobium Bacteria convert atmospheric nitrogen into a form that the legume can use for its own growth. When grass or legume cover crops are killed or incorporated, soil microorganisms decompose their residue. In a process called mineralization, the N in the plant tissue is converted by soil microbes into a form (nitrate) that subsequent plants can use. Nitrogen in the aboveground biomass of the cover crops varies considerably within species, but legumes generally contribute anywhere from 60-200 lb of N per acre. This nitrogen is mineralized over an extended period of time, with an average of 50% of the total N contained in the cover crop available to subsequent crops. Cover crops help recycle other nutrients on the farm. Besides nitrogen (N), phosphorous (P), potassium (K), calcium (Ca), magnesium (Mg),

sulfur (S), and other nutrients are all accumulated by cover crops during a growing season. When the green manure is incorporated, or laid down as mulch, these plant-essential nutrients become slowly available during decomposition. Certain broad-leaved plants are noted for their ability to extract P from soils. Likewise, alfalfa and other deep-rooting green manures scavenge nutrients from the subsoil and move them upwards to the surface, where they become available to following crops. For more information on including cover crops into your rotation, please contact your local USDA-NRCS office.



Fall Seeded Small Grain into Spring Wheat Stubble

Permitting Regulations for Animal Waste Systems

What will my operation's permit require?

Your CAFO permit will require you to meet certain conditions for your production and land application areas. The specific requirements of your permit will depend on whether your operation is a Large, Medium, or designated CAFO.

Requirements for all beef cattle or veal calf CAFOs:

You can expect your permit to require you to

- Implement a nutrient management plan
- Submit annual reports to your permitting authority
- Keep your permit current until you completely close your operation and remove all manure
- Keep records of your nutrient management practices for at least 5 years (See the pamphlet What Are the Federal Record-Keeping and Reporting Requirements?)

Nutrient management plans for all beef cattle and veal calf CAFOs must include provisions for:

- Assuring adequate manure storage capacity
- Proper handling of dead animals and chemicals
- Diverting clean water from the production area
- Keeping animals out of surface water
- Using site-specific conservation practices
- Developing ways to test manure and soil
- Assuring appropriate use of nutrients when you spread manure
- Keeping records of your nutrient management practices

Your permitting authority might set more requirements for any size CAFO.

Requirements for Medium and designated beef cattle or veal calf CAFOs

Your permitting authority might set more requirements for your nutrient management plan. These requirements will depend on the permit writer's best professional judgement and could be like the requirements for Large beef cattle or veal calf CAFOs.

Is my beef cattle or veal calf operation a CAFO?

Your operation is a CAFO if it is an animal feeding operation (AFO) and it meets one of the following conditions

Large CAFOs

Your beef cattle or veal calf AFO is a Large CAFO if it has at least

- 1,000 beef cattle
- 1,000 veal calves

Medium CAFOs

Your beef cattle or veal calf AFO is a Medium CAFO if it has at least

- 300 beef cattle
- 300 veal calves

and

- a man-made ditch or pipe carries manure or wastewater from your operation **OR**
- your animals come into contact with surface water running through the area where they're confined

Designated CAFOs

No matter what size your operation is, if it is an AFO, it can be designated a CAFO. If your permitting authority inspects your operation and finds that it's adding pollutants to surface waters, your operation might need a CAFO permit.

My operation is a CAFO.

What do I have to do?

You must apply to your permitting authority for a permit. Most states have the authority to manage CAFO programs and issue permits. State CAFO programs are based on the revised national CAFO regulation. You can use this pamphlet to help you learn about the minimum requirements for a permit. You should contact your permitting authority to find out what your state-specific requirements are and how to apply for a permit. Check the insert to this pamphlet for your permitting authority's contact information.

Requirements for large beef cattle or veal calf CAFOs

Nutrient management plans for large beef cattle or veal calf CAFOs have more requirements for production and land application areas.

Production area

- Design your production area to contain all of your CAFO's manure plus the runoff from a 25-year, 24-hour rainfall event (large storms). (Overflows from large storms are allowed only if your operation is designed and operated to meet these specifications.)
- Install depth markers in liquid manure storage structures
- Inspect your production area weekly

and all water lines daily

- Correct any problems you find as soon as possible
- Properly handle dead animals

Land application area

- Apply manure at rates that meet your permitting authority's standards
- Analyze manure for nutrient content at least once a year
- Analyze the soil from your land application fields for phosphorus amounts every 5 years
- Avoid applying manure to any land within 100 feet of surface water
- From time to time, inspect your land application equipment for leaks

Transferring manure to other persons

- Keep records for at least 5 years on the date, recipient, amount, and nutrient content of the manure you transferred
- Information about the nutrient content of your manure must be given to the recipient

See the pamphlet Will My Operation Be Regulated? for the definition of an AFO. The production area is the area where your animals are housed and manure is stored.

The deadline for applications for permits for medium and small AFO's is July 1, 2008. The deadline for implementation of any construction on medium and small AFO's is based on the construction schedule submitted with the application. For further information contact the Division of Water Quality, North Dakota Department of Health phone: (701) 328-5208; or your local county NRCS office; or Watershed Coordinator Ryan Odenbach at (701) 252-2521 ext. 123.



Cover Crops

From the Buleigh County Soil Conservation District

- Reduce erosion from wind and water—the soil’s armor
- Increase soil organic matter (SOM) - greater sunlight harvest & root mass. Increased SOM results in greater water holding capacity and nutrient cycling.
- Manage excess nutrients in the soil profile—protect water quality.
- Promote biological nitrogen fixation—reduce commercial fertilizer.
- Increase biodiversity—more diversity in the crop rotation, especially for forage based ranchers.
- Weed and disease suppression—encouraged by crop diversity.
- Provide supplemental forage—grazing or haying for livestock to improve the economics.
- Soil Moisture management—Evaporation reduction on dry years and / or greater water use on wet years.

Where to Use Cover Crops:

Cover Crops can be seeded after early harvested crops such as winter wheat, winter triticale, pea, forage barley or oat, and corn silage. Average harvest dates are July through the first half of August. This seeding window will normally allow adequate plant development to allow for fall grazing.

Cover Crops can be seeded after normal fall harvest occurs for cash crops, such as small grains or canola. Average harvest dates include the second half of August through mid September. This seeding window will not be as attractive for fall grazing, but will allow adequate growth for soil health purposes.

Cover Crop Spotlight: Turnips

Turnips provide an excellent choice for cover crop applications. Turnips are a member of the Brassica genus in the mustard family. Members of the genus are collectively known either as cabbages or mustards and are remarkable for containing more important agricultural crops than any other genus. Turnips are deep rooted and with their low carbon to nitrogen ratio, they have the ability to move nitrogen up the soil column from lower layers. This nitrogen is then quickly available to succeeding crops. Turnips have high forage quality containing 20% protein in the leaves and bulb of the roots. Producers utilizing turnips have noticed that cattle will actually choose to consume the turnips over many other forages. Cattle will sometimes pull the plant out of the ground to consume the bulb of the root as well. Turnips are a cool season broadleaf and in North Dakota prefer growth in the spring and after August 15 in the late summer or early fall. This late summer/early fall growth period may offer producers the most benefit in a cropping rotation. Seeding following small grains or interseeding into corn may be options a producer would choose. Turnip seed is relatively inexpensive, contact your local NRCS or SCD office for more information.



Turnip Cover Crop



Root on Young Turnips Cover Crop



Turnip Cover Crop in Corn, Aerial Seeded

Cover Crops

by Jon Stika

Cover crops have long been a part of North Dakota agriculture, used to control erosion and provide forage for livestock. With increasing fuel and fertilizer costs and an appreciation for soil quality, farmers and ranchers are taking a renewed interest in cover crops to control erosion, fix nitrogen, suppress weeds, provide supplemental forage, minimize compaction, recover leached nitrogen, increase soil organic matter, conserve soil moisture or use excess soil moisture.

Crops being considered for use as cover crops include; barley, buckwheat, canola, cowpea, corn, flax, hairy vetch, lentil, millet, mustard, oat, pea, radish, rye, sorghum, soybean, sunflower, sweetclover, triticale, turnip, and wheat.

Recently the Burleigh County Soil Conservation District hosted a tour of three area farms and ranches that are using cover crops in their operation. The tour titled; 'Soil Health Tour – Using Cover Crops with No-till Cropping Systems and Grazing Systems' also included a stop at the Burleigh County Soil Conservation District's cover crop demonstration plots.

The tour began at the Marlyn and Patrick Richter farm southeast of Bismarck where a cover crop "cocktail" of millet, cowpea, sunflower, turnip, soybean, radish and sweetclover was planted after a crop of forage pea was harvested in early June. The Richters plan to graze the cover crop this fall, leaving 50% of the cover crop to catch snow and cover the soil. Burleigh County SCD (Soil Conservation District) District Conservationist Jay Fuhrer told the group of over 200 farmers, conservationists and researchers "The next level (of soil quality improvement) is going to involve cover crops."

Another demonstration on the Richter farm involved inter-seeding cow pea into corn. The cowpea was planted when the corn was at the 6-leaf stage with a 7-row modified planter owned by the Burleigh County SCD.

The next stop on the tour was at the Alvin Braun farm. Alvin has been experimenting with turnips to help cycle nitrogen from deep in the soil back to the surface. In 2005 Alvin grew turnips that produced 6000 pounds per acre of 20% protein forage that was grazed by cows. Turnips are deep rooted, high moisture, and have a low carbon:nitrogen ratio that makes them an excellent cover crop to pull nitrogen back to the upper layer of the soil for the next crop. Alvin also noticed increased microbial activity and less weed pressure in his soil. "Healthy soil is clean (weed free) soil", noted Alvin.

The next stop on the tour was at the Gabe Brown Ranch east of Bismarck. Gabe began by stating his vision for his ranch, "Our whole program is to build soil health and feed the soil naturally". Gabe uses winter triticale, cowpea, sorghum/sudan, soybean, sunflower, radish, turnip, proso/pearl/German millet and sweetclover in his cover crops.

Gabe often grazes his cover crops with cattle to move them off of native rangeland late in the summer when forage quality of native plants typically declines. Gabe has found that 20 pounds per acre of hairy vetch seed planted with winter triticale produces as many tons and as good of quality of forage as corn for silage. All of Gabe's cropland has a cover crop on it each year except land that is in alfalfa for three or four years at a time in his crop rotation. "When you concentrate on soil health...yields will increase" Gabe advises.

The final stop on the tour was at the Burleigh SCD cover crop plot just east of Bismarck. The cover crop plot included barley, lentil, turnip, radish, rye grass, cowpea, proso millet, buckwheat, soybean, sudangrass, alfalfa, lupin, hairy vetch, sunflower, sweetclover, and corn planted in a variety of combinations or "cocktails" or as a single species. Casual observation showed that the cocktails were producing more biomass this year compared to the single species planted individually. Data from previous years of the cover crop plot has also shown this to be true.

Cover crops can be used to reduce erosion, increase soil organic matter, manage crop nutrients in the soil profile, biologically fix nitrogen, increase bio-diversity, suppress weeds and crop diseases, provide supplemental forage, and manage soil water. The historic average annual precipitation at Bismarck, North Dakota is 15.4" and the average frost-free period is approximately 125 days.

319 Annual Report

The Lower Pipestem Creek Watershed Project's 2007 Annual Report to the North Dakota Department of Health was recently submitted. The report is a review of monies spent and practices applied over the life of the project.

To date, approximately 71 producers have signed contracts and are in various stages of plan implementation.

These contracts include the following practices:

Nutrient Management	17,799.3 acres
No-Till	8,145.2 acres
Mulch-Till	10,563.9 acres
Prescribed Grazing	4,503.1 ac (2,861.3 applied; 1,641.8 planned)
Fencing on Grazing	207,036 LF (163,651 applied; 43,385 planned)
Wells	6 (5 applied, 1 planned)
Troughs or Tanks	15 (12 applied; 3 planned)
Pipelines	16,496 LF (16,396 applied; 100 planned)
Pasture & Hayland converted from Cropland	1,500.2 acres
Animal Waste (feedlot) Updates	8 (8 have been surveyed & 4 are complete, 4 in progress)
Stock Ponds	4 (3 completed, 1 planned)
Spring Developments	2
Riparian Buffer Areas	55,000 Row Feet applied; 34.2 acres applied 109,990 Row Feet planned; 46.8 acres planned
Windbreaks	3,300 LF and 32.2 acres

Cumulative Section 319 & Producer Expenditures on BMP 's April 1, 2002 through September 1, 2007

		Section 319 Costs	Producer Match	* Project Partner Costs	
392 Field Windbrk	3300 LF	\$1,647.12	\$1,098.08		\$2,745.20
612 Tree Planting	32.2 ac	\$8,382.40	\$4,495.79	\$1,092.48	\$13,970.67
382 Fence	163,651 LF	\$76,445.25	\$50,963.50	\$3,000.00	\$127,408.75
512 P/H planting	1500.2 ac	\$42,296.14	\$28,197.42		\$70,493.56
329A No-Till	8,145.2 ac	\$84,619.44	\$56,412.96		\$141,032.40
329B Mulch Till	10,563.9 ac	\$96,431.52	\$64,287.68		\$160,719.20
590 Nutrient Mgt.	17,799.3 ac	\$86,335.90	\$57,557.27		\$143,893.17
351 Well Decomm.	1	\$360.00	\$240.00		\$600.00
313 AWS	5	\$312,903.15	\$178,602.09	\$30,000.00	\$521,505.24
595 Pest Mgmt	2560 ac	\$15,360.00	\$10,240.00		\$25,600.00
642 Wells	5	\$25,516.20	\$17,010.80		\$42,527.00
614 Trough/Tank	12	\$13,919.78	\$9,279.85		\$23,199.63
378 Pond	3	\$2,454.21	\$1,636.14		\$4,090.35
516 Pipelines	16,496 LF	\$28,245.56	\$18,830.37		\$47,075.93
574 Spring Develop	2	\$14,010.19	\$9,340.12		\$23,350.31
591 Riparian Tree	34.2 ac	\$20,385.68	\$4,833.13	\$8,757.33	\$33,976.14
TOTAL		\$829,312.54	\$513,025.20	\$42,849.81	\$1,382,187.55



Upcoming Events Jamestown Ag-Expo

At the Jamestown Ag-Expo in January, the Lower Pipestem Creek Watershed Project will be hosting a cover crop workshop with emphasis on utilizing livestock and no-till, featuring producers from Burleigh County.

Producer and Burleigh County Soil Conservation District Staff Ken Miller will be featured. He will be accompanied by Joshua Dukart of the Burleigh County SCD and other producers. Ken and other producers in Burleigh County have had amazing results in using cover crops. Not only in providing grazing for livestock but nutrient cycling and water use at critical times.

Use of cover crops can help producers using no-till avoid some of the excess moisture that may develop in no-till in Stutsman, Foster and Wells counties.

Winter Ag Expo

Jamestown Civic Center
Over 10,000 square feet of Ag Equipment,
Products and Services on display.

FREE ADMISSION

9 am - 5 pm Tuesday, January 8th
9 am - 4 pm Wednesday, January 9th

[January 9, 2008](#)

Stutsman County Ag Improvement Association Day
Free coffee all day sponsored by Wells Fargo Bank

Club Room:

9:00 a.m.	Weed Resistance & Control of Volunteer Round Up Ready Crops	Greg Endres , NDSU EXT Area Extension Specialist/Cropping Systems Carrington Research and Extension Center
10:00 a.m.	Wind Energy Development "How Does it Affect You?"	Connie Ova , facilitator Executive Director, Jamestown/Stutsman Development Corp.
11:00 a.m.	Stutsman Co Ag Improvement Annual Meeting	Glen Nagel , President
11:30 a.m.	Soybean Council County Representative Election	Tom Olson , Facilitator NDSU Extension Agent/Stutsman County
11:45 a.m.	Dry Pea and Lentil Representative Election	Tom Olson , Facilitator NDSU Extension Agent
Noon	FREE Farmers Appreciation Lunch	Sponsored by Unison Bank
1:00 p.m.	Burleigh County No Till Producer Experiences using Cover Crops & Livestock in No Till Rotations	Ryan Odenbach , Facilitator Watershed Coordinator, Stutsman County SCD

Stutsman SCD
Lower Pipestem Creek Watershed Project
1301 Business Loop East
Jamestown, ND 58401



Area Producers Visit Dakota Lakes Research Farm at Pierre, SD

In July the Watershed Project along with NRCS and NDSU Extension hosted a no-till tour to the Dakota Lakes Research Farm near Pierre, SD. This tour was attended by 50 area producers.

The tour stopped at Bathgate, SD, near Redfield, and toured the Max Williams farm with SD NRCS Soil Scientist Jim Miller. Much was learned about no-till corn rotations, fertilizing, and management. During the bus trip the group heard from area no-till producers discuss their farming and livestock operations. Also, Tom Hanson and Connie Sova discussed the carbon credits program.

We would again like to thank all the sponsors of the program including First Community Credit Union, Ag Country Farm Credit Services, Titan Machinery, Butler Caterpillar, Jamestown Implement, Bank Forward, Stutsman County Farmers Union, Medina-Jamestown Farmers Union, Natural Resources Conservation Service, Stutsman County Soil Conservation District, and the NDSU Extension Service.



Dwayne Beck



Jim Miller and Max Williams