Clean Water Starts With Us

WATERSHED IMPROVEMENT IN IOWA DNR ◆ DSC ◆ NRCS FALL 2013

IN THIS ISSUE:

Prairie strips offer conservation potential

A new practice may help reduce soil runoff and nutrient loss in fields, according to an Iowa State University study.

Prairie strips mixed in with crops at the Neal Smith National Wildlife Refuge offer water quality and wildlife diversity benefits. Photo courtesy of Leopold Center for Sustainable Agriculture.

STRIP (Science-based Trials of Row crops Integrated with Prairie) is an ongoing experiment at the Neal Smith National Wildlife Refuge.

Strips of native plants are planted on cropland along the contours of slopes, perpendicular to water flow in the field, to decrease sediment and nutrient loss from fields.

According to Matt O'Neal, an associate professor of Entomology at ISU, it's known that having strips of native plants has benefits for fields. For example, strips of prairie attract beneficial predatory and pollinator insects. Prairie strips also provide habitat for native animal, insect, plant and bird populations.

Strips in the experiment had, on average, a 380 percent increase in plant diversity. An average of 51 plant species were found in areas of 6 square meters (about 20 square feet).

The study, "Using biodiversity to link agricultural productivity with environmental quality: Results from three field experiments in Iowa," also indicated that the strips of prairie did not lead to any increase in weed infestation.

However, biodiversity was not the main goal of STRIPs. Instead, the experiment aimed to quantify the benefits and find ways to improve water quality.

"There had been incidents where there were fields with minimal amounts of native vegetation that seemed to offer these benefits," says Mary Harris, an ISU adjunct assistant professor in Natural Resource Ecology and Management.

"By planting a small amount of the field to native prairie plants, you get benefits that are far greater than the small loss of acreage taken out of production," Harris added.

Prairie strips were shown to decrease sediment loss by up to 95 percent. Additionally, they decreased nitrogen and phosphorus loss by 90 percent and reduced over-land water flow by

continued on page 2

Women in Sustainable Agriculture Conference Nov. 6-8

The fourth National Conference for Women in Sustainable Agriculture, held Nov. 6-8 in Des Moines, offers a chance for women to connect and learn through thought-provoking keynotes, workshops and local field tours. Field tours will showcase women-owned farms and teach skills such as chainsaw use, tractor repair and prescribed fire. www.wfan.org

clean water starts with you.

Strips of prairie in cropfields offer water quality benefits

continued from page 1

up to 60 percent.

The average size of the strips varies from farm to farm.

According to Harris, the determining factor is how much room farming equipment will need. Most strips will also be planted at the bottoms of hills.

"Each field is going to be different," Harris says. "A portion of the strip land will be at the bottom of slopes, in an area referred to as the 'foot' of the slope."

The next stage of the experiment is to conduct tests on farmers' fields. Currently, the research team is looking for farmers to adopt the practice so their fields can be used as demonstration sites. Interested farmers should contact Mary Harris at maharris@iastate.edu.

The experimental fields are on the Neal Smith National Wildlife Refuge. Visitors can still view them.

Several farmers have also adopted and implemented the practice.

For more information:

STRIPs at Neal Smith National Wildlife Refuge: http://www.nrem.iastate.edu/research/STRIPs/research/index.php

Leopold Center for Sustainable Agriculture: http://www.leopold.iastate.edu/search/node/STRIPs

Article by Brandon Hallmark

Water Rocks! education program launches

New education initiative Water Rocks! delivers entertaining and engaging activities to inspire kids of all ages to appreciate water.

Through classroom visits, an interactive website and award-winning computer game, music videos, dogs, activities, public service ads, teacher/peer mentor workshops and geocaching, Water Rocks! offers an original, lighthearted approach to this vast topic.

"It begins and ends with water," said Jacqueline Comito, campaign director. "The long-term health of our land and water rests in our youth, the future decision-makers. We use music, science, math, art, video and technology as the means of reminding students of the fact that water is elemental to life."

Through music

Original music videos on the Water Rocks! website or YouTube channel, as well as audio tracks on the website, offer catchy tunes and visuals to make learning easier.

"Music is elemental to our lives. Something sung is more powerful and easier to remember than the spoken word. It triggers our imagination and touches our heart," said Comito.

At a school visit, the Water Rocks! team helps students see the cumulative effect of pollutants in the water.

In person

The Water Rocks! team visits K-12 classrooms at no charge, teaching kids about water, natural resources and agriculture, all while weaving science, technology, engineering and math with the arts.

The team may also bring the Conservation Station, which teaches how water connects agriculture and urban areas. Its rainfall simulator shows the effects of rainfall on various surfaces like bare soil, no-tilled soil and pavement.

In 2014, Water Rocks! will hold a teacher summit for selected Iowa educators and students to discuss water education and take home a kit of Water Rocks! activities.

Through nature

Water Rocks! encourages Iowans to spend more time outside and appreciate our natural areas. Using a GPS device or smartphone, geocachers seek hidden treasure boxes, or caches. Water Rocks! caches, placed in 11 Iowa state parks, use riddles and fun facts to teach geocachers about watersheds, water quality and parks. Coordinates to these caches are on the Water Rocks! website.

Through media

The nationally recognized computer game "Rock Your Watershed!" uses agricultural scenarios to teach the effects of different land treatments. The game, videos, songs and more can be found at www.waterrocks.org.

Partners of Water Rocks! are Iowa State University Extension and Outreach, DNR, Leopold Center for Sustainable Agriculture, Iowa Water Center and Iowa Learning Farms.

Finding your local conservation champions

Often, there's one thing that can motivate and inform landowners better than any news release or flyer, and that's an enthusiastic and well-respected farmer.

The importance of these local conservation champions was brought to mind recently with the loss of one such farmer, Dan Specht, in a farm accident.

Specht, of McGregor, was well known for both his unique way of farming as well as his promotion of it.

"He had a way of helping you notice the little things in our environment while also making you aware of how they fit into the big picture of what we do," said Eric Palas, who worked with Specht on the Bloody Run Creek watershed project.

Specht promoted conservation by example, successfully using a number of diverse practices on his land – so much so that there wasn't much to do beyond a new pond as part of the Bloody Run project. But how he shared his experiences with neighbors – including lots of field days – was just as valuable, said Palas.

Tim Smith hosts a field day on his farm in the Boone River watershed. Local farmers are often the best spokespeople and promoters of watershed efforts. Bruce Voigts photo.

"I spent the bulk of my time struggling to keep soil from eroding from corn and soybean fields," Palas said of the Bloody Run project. "Very little soil ever left Dan's farm. Farms like Dan's make a project coordinator's job relatively easy."

Specht was active in a number of conservation and sustainability groups and testified in Washington, D.C. on the impact of different farm and conservation programs on his property.

But one doesn't need to go as far as Washington, D.C. to make a difference. Often, it's the farmer who's willing to show folks around his farm at a field day or talk up cover crops at the coffee shop that can also make a real difference locally.

Tim Smith helps promote conservation in the Boone River watershed by talking to reporters, giving advice at field days and hosting workshops on his farm.

"They're just learning and gaining confidence, like I was a few years ago," said Smith of farmers attending field days. "I let farmers know that it works and it's doable. If farmers aren't aware of the practices, they won't adopt them."

Smith is an early adopter of cover crops, which can often be a tough sell for coordinators. He also uses strip tillage and nutrient management and installed a bioreactor.

"He leads by example and anything people ask, he's willing to talk to them," said Bruce Voigts, coordinator of the Boone River and Lyons Creek watershed efforts. "He's just so honest and people can see that. He's open to let people know and you can tell he really believes in it."

So how do coordinators find these champions in their own watersheds? Voigts suggests patience, reflecting on how he wouldn't have expected Smith to be so outspoken based on when he first met him.

"As a coordinator, you don't know who will be that person," Voigts said. "Be honest with the producers, tell the truth and someone will come forward."

Dan Specht promoted conservation and sustainable farming in northeast Iowa and in Washington, D.C. Photo courtesy of Practical Farmers of Iowa.

Research looks into winter rye as a cover crop

In a lab on the Iowa State campus, potted corn plants sprout inside chilly control chambers. Tom Kaspar digs into the soil and comes up with a handful of roots from the winter rye that occupied the pot before the corn sprouted.

Those roots help hold soil and nutrients in place during a time of year when corn and soybeans aren't growing—particularly important during unusually wet weather, like this spring. In the case of winter rye, however, the roots also harbor a mystery. They seem to host pathogens that sometimes cause a yield decrease in the following corn crop.


Tom Kaspar
Courtesy of Leopold Center

Kaspar, a plant physiologist at the USDA National Laboratory for Agriculture and the Environment in Ames, is investigating that scenario with a competitive grant project funded by the Leopold Center's Ecology Initiative. Kaspar called winter rye "our best hope" for an effective cover crop in Iowa, because it can overwinter in temperatures far below freezing. Cover crops reduce erosion, recycle nutrients such as nitrogen and phosphorus, protect water quality and sequester carbon in the soil.

Yield decreases are sometimes observed when grass species are planted in succession, such as winter rye, winter wheat or triticale cover crops before corn, or continuous corn crops. The effect is difficult to study, because it does not occur every year or in every field.

In the lab, Kaspar can recreate the cold, wet conditions that encourage pathogen growth. The experiment compares corn grown with and without a rye cover crop, as well as fungicide-treated and untreated corn seed. Kaspar said he hopes to find "the smoking gun" that links common soil pathogens on the rye roots with the demise of young corn plants.

"The end result will be that we'll be able to make some suggestions to farmers on how they might manage winter rye," Kaspar said. "It's still an excellent cover crop before corn and many farmers successfully manage it without any problems at all. This experiment will help us understand why."

See more at: http://www.leopold.iastate.edu/news/leopold-letter/2013/summer/managing-winter-rye#sthash.OL8v7Lho.dpuf

Article courtesy of Leopold Center for Sustainable Agriculture

IDALS funding helps farmers with nutrient management

IDALS has awarded more than $2.8 million in cost-share for nutrient education practices, shortly after the agency announced the funding.

"This has been a great kick-off to our water quality initiative and we look forward to continuing to work with farmers to put more practices on the ground to better protect water quality here in Iowa and downstream as well," said Iowa Secretary of Agriculture Bill Northey.

The initial practices prioritized for funding were cover crops, no-till or strip till, or using a nitrification inhibitor when applying fertilizer.

IDALS received applications covering 120,680 acres from 1,096 different farmers. Practices included 109,415 acres of cover crops, 7,321 acres of nitrification inhibitor, 2,675 acres of no-till and 1,268 acres of striptill. Farmers in 97 of 100 SWCDs across the state received funding.

The cost-share rate for farmers planting cover crops is $25 per acre and $10 per acre for no-till or strip till. Farmers using a nitrapyrin nitrification inhibitor when applying fall fertilizer receive $3 per acre.

Any farmer not already using these practices can apply for assistance. Farmers are only eligible for cost share on up to 160 acres.

"By allowing farmers to try new practices on a limited number of acres at a reduced cost we want to showcase the benefits of these practices and encourage farmers to incorporate them into their operation," Northey said.

The Iowa Department of Agriculture and Land Stewardship received the one-time funding to support statewide science-based water quality practices.

The funds can be used over the next five years and it is anticipated additional rounds of funding will be available that will include assistance for additional nutrient reduction practices, including buffers, bioreactors, wetlands, and others listed in the Iowa Nutrient Reduction Strategy.

Article courtesy of IDALS

CWSRF offers new funds for watershed improvement

A new program focused on preventing and cleaning up polluted runoff from city streets and agricultural land will soon award more than $12 million to 22 Iowa communities.

The Water Resource Restoration Sponsored Projects effort, a new source of funding for water quality improvement, is seeking public comment on the 22 projects it selected out of 32 applicants.

"This new program will provide approximately $12.7 million to help local Iowa communities protect streams, lakes and wetlands – water resources that are important to them," said Chuck Gipp, DNR director. "On a larger scale, the practices to be funded will reduce nutrients that travel down the Mississippi River and contribute to the hypoxic dead zone in the Gulf of Mexico."

The funding for the new program comes from the Clean Water State Revolving Fund (CWSRF), a loan fund for wastewater and other water quality projects.

On a typical CWSRF loan, the wastewater utility borrows money and repays it plus interest and fees. On a CWSRF loan with a sponsored project, a portion of the money that the utility normally would have paid in interest goes toward an additional watershed-based water quality project.

Through an interest rate adjustment, the utility's ratepayers get both wastewater and watershed projects for the cost of one.

"The Iowa Finance Authority is proud to partner with the Iowa Department of Natural Resources to administer the State Revolving Fund," said Dave Jamison, Iowa Finance Authority Executive Director. "This program is yet another way that the State Revolving Fund is helping to ensure quality water for Iowans for generations to come."

The locally-based projects will also bring together different groups and organizations in the community to improve water quality.

"On many of these projects, there will be unique partnerships between the communities and water quality organizations, such as soil and water conservation districts, county conservation boards and watershed management authorities," said Bill Northey, Iowa Secretary of Agriculture. "This program will promote watershed planning and approaches that reduce the environmental impact from both urban and agricultural areas of the state."

The DNR's recommendations for projects to be funded are currently available for public review and comment. The recommendations will be presented for approval to the Iowa Environmental Protection Commission on Oct. 15.

Information on the Water Resource Restoration Sponsored Projects effort is posted online at www.iowasrf.com/about_srf/water-resource-restoration-sponsored-projects/.

The recommendations and tentative awards include the following:

APPLICANT	AMOUNT	PROJECT	APPLICANT	AMOUNT	PROJECT
City of Blakesburg	$ 45,000	Address gully erosion with grade stabilization	City of Keokuk	$245,000	Infiltration of storm water using permeable paving to reduce runoff to combined sewers
City of Buffalo	$35,328	Bank stabilization in park on Mississippi River	City of Kingsley	$281,512	Infiltrate storm water in rain gardens, bioswales
City of Cedar Rapids	$294,000	Stabilization of Noelridge Park tributary to McLoud Run and Indian Creek	City of Laurens	$43,800	Infiltration of urban storm water via bioswales
City of Clinton	$661,550	Infiltrate stormwater to reduce contaminants and runoff to combined sewer system	City of Lohrville	$384,803	Infiltrate storm water in rain gardens, bioswales, retention practices
City of Coggon	$131,320	Cost-sharing of ag practices with the Soil and Water Conservation District	City of Monona	$274,102	Urban practices to prevent erosion and runoff
City of Collins	$170,000	Grassed waterway and conservation buffer to address runoff from ag land	City of New London	$325,500	Streambank stabilization, erosion control practices on ag land, urban bioretention
City of Davenport	$708,000	Permeable paving on streets and sidewalks, use of street trees	City of Ottumwa	$522,311	Increase infiltration of storm water through soil quality restoration, decrease streambank erosion
City of Donnellson	$315,500	Includes urban practices and cost-sharing of ag practices with the Soil and Water Conservation District	City of Prairie City	$345,800	Treat urban storm water in bioswale with bioretention cells, bioretention pond
City of Durant	$600,000	Realignment of storm sewers to convey storm water to constructed wetlands, streambank stabilization	City of Seymour	$56,000	Infiltration of urban storm water via bioswales
City of Fort Dodge	$2,107,500	Streambank stabilization on Soldier Creek and improvements related to Badger Lake Watershed plan	City of Sioux City	$1,440,000	Streambank and streambed stabilization along with reorientation of storm sewer outlets and study of additional upland practices
City of Granger	$448,000	Streambank stabilization, bioswale with native vegetation	Wastewater Reclamation Authority	$3,270,000	Restoration of riparian buffer and flood plain along Four Mile Creek

Survey shows higher adoption of cover crops, drought benefits

A new study looking at cover crops shows a rapid increase in cover crop acres and increased yields in fields in cover crop during the 2012 drought.

The survey was carried out in partnership between the USDA North Central Region Sustainable Agriculture Research and Education (SARE) program and the Conservation Technology Information Center (CTIC).

More than 750 farmers were surveyed during the winter of 2012-13, primarily from the Upper Mississippi River watershed. Questions on cover crop adoption, benefits, challenges and yield impacts were included in the survey. Key findings included the following:

• During the fall of 2012, corn planted after cover crops had a 9.6 percent increase in yield compared to side-by-side fields with no cover crops. Likewise, soybean yields were improved 11.6 percent following cover crops.

• In the hardest hit drought areas of the Corn Belt, yield differences were even larger, with an 11 percent yield increase for corn and a 14.3 percent increase for soybeans.

• Surveyed farmers are rapidly increasing acreage of cover crops, with an average of 303 acres of cover crops per farm planted in 2012 and farmers intending to plant an average of 421 acres of cover crops in 2013. Total acreage of cover crops among farmers surveyed increased 350 percent from 2008 to 2012.

Above: root system of rye plant. Below: cover crops emerge in Wright County. Bruce Voigts photos.

• Farmers identified improved soil health as a key overall benefit from cover crops. Reduction in soil compaction, improved nutrient management and reduced soil erosion were other key benefits cited for cover crops. As one of the surveyed farmers commented, "Cover crops are just part of a systems approach that builds a healthy soil, higher yields and cleaner water."

• Farmers are willing to pay an average (median) amount of $25 per acre for cover crop seed and an additional $15 per acre for establishment costs (either for their own cost of planting or to hire a contractor to do the seeding of the cover crop).

"It is especially noteworthy how significant the yield benefits for cover crops were in an extremely dry year," said Dr. Rob Myers, a University of Missouri agronomist and regional director of extension programs for North Central Region SARE. "The yield improvements provided from cover crops in 2012 were likely a combination of factors, such as better rooting of the cash crop along with the residue blanket provided by the cover crop reducing soil moisture loss. Also, where cover crops have been used for several years, we know that organic matter typically increases, which improves rainfall infiltration and soil water holding capacity."

Full results of the survey are available at http://www.northcentralsare.org/Educational-Resources/From-the-Field/Cover-Crops-Survey-Analysis.

Article courtesy USDA-SARE

CLEAN WATER STARTS WITH US

WATERSHED IMPROVEMENT IN IOWA

Published quarterly by the Iowa Department of Natural Resources, Iowa Department of Agriculture and Land Stewardship - Division of Soil Conservation, and USDA Natural Resources Conservation Service.

Editor: Jessie Brown, DNR: 515-281-5131 or Jessie.Brown@dnr.iowa.gov

Contributors: Kyle Ament, Allen Bonini, Bill Ehm, Rachel Glaza, Steve Hopkins, Mary Beth Stevenson (DNR); Todd Coffelt, Mike Franklin, Jim Gillespie, James Martin, Jerry Neppel, Jeff Tisl, Bob Waters (DSC); Marty Adkins and Laura Crowell (NRCS)

The publication of this document has been funded by the Iowa Department of Natural Resources through a grant from the U.S. Environmental Protection Agency under the Federal Nonpoint Source Management Program (Section 319 of the Clean Water Act). Federal and State laws prohibit employment and/or public accommodation (such as access to services or physical facilities) discrimination on the basis of age, color, creed, disability (mental and/or physical), gender identity, national origin, pregnancy, race, religion, sex, or sexual orientation. If you believe you have been discriminated against in any program, activity or facility as described above, or if you desire further information, contact the Iowa Civil Rights Commission, 1-800-457-4416, or write to Iowa DNR, Wallace State Office Building, 502 E. Ninth St., Des Moines, Iowa, 50319.