Clean Water Starts With Us

WATERSHED IMPROVEMENT IN IOWA DNR ◆ DSC ◆ NRCS SUMMER 2011

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Helping farmers adapt for no-till planting

Many farmers may see the cost of new equipment as a major deterrent to switching to no-till farming, but the equipment they need could already be in the machine shed.

With a few adjustments and a small investment, farmers can often adapt the row crop planter they already have, according to Mark Hanna, an ag engineer with Iowa State University Extension.

"Cost is not a big issue here," Hanna said. "It's a one-time fee or investment, but in the big scheme you're substituting management for trips through the field."

Hanna, who often holds field day workshops that delve into the details of adapting planters, says there are three main changes farmers may need to make to their planters.

First, Hanna says you need adequate down pressure on the row unit to make sure the seed opener is penetrating the ground.

Mark Hanna talks about tillage management at a field day. Courtesy ISU Extension.

This is often done by adding down-pressure springs to the tool bar frame. Hanna estimates that this can cost about $5,000 to $6,000, but some newer 12- to 24-row planters may have a pneumatic adjustment option and may not need new springs, he said.

Second, planters need row cleaners on the front to push some of the surface crop residue aside for corn seed to emerge. According to Hanna, this step isn't as important for soybean fields.

Finally, farmers need to know how to set and adjust the planter appropriately.

"It's a different management style," Hanna said of no-till. "You need to pay more attention to soil moisture and temperature, weeds and the adjustment of your equipment."

Because it's a different way to farm, Hanna said producers and landowners can have concerns about making the switch to no-till.

"A lot of people struggle with planting a couple of days later than everyone else," said Velvet Buckingham, a coordinator in the Rathbun Lake watershed. "You need to wait until conditions are right."

Hanna recommends starting small, using no-till on limited acres the first year.

Hanna also suggests finding local no-till farmers willing to share their experience, an idea Buckingham echoes.

"It's that one-on-one with another landowner, if you can get a speaker or

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clean water starts with you.

Check out new riparian buffer videos

Watch three new Leopold Center videos detailing riparian buffer research in Story County's Bear Creek watershed.
www.leopold.iastate.edu/research/eco_files/ground.html

Lessons learned from working with women landowners

The following is an essay from Karen Grimes, a DNR information specialist who promotes conservation to women landowners and has worked with the Women, Food and Agriculture Network in reaching out to this group.

Just back from four meetings with women landowners, I'm amazed and thrilled with how different these meetings are from going to your typical field day or informational meeting with producers.

The Indianola, Chariton, Bloomfield and Cherokee meetings — four of 10 similar meetings in the last year — were that: informational. But they were so much more.

Women landowners at the Carroll WFAN meeting check out the Iowa Learning Farms' Conservation Station.

Sponsored by Women, Food and Agriculture Network, the overall mantra for meeting organizers is that simply presenting information doesn't generate change. And when it comes to conservation, people need to see it and feel it before change occurs.

For someone like me (an 11-year veteran of the St. Charles, Mo. Soil and Water Conservation District), the emotional context at these women landowner meetings is unexpected and phenomenal.

They care. They aren't afraid to share anger that erosion is rampant, anxiety about dealing with a renter who is doing a poor job of conservation, uncertainty on how the next generation will farm or joy that they've met another landowner who can recommend a good fencing contractor.

Whether landowner, operator or almost bystander, they care about their land. They are passionate about everything from the Conservation Reserve Program (hating it or loving it) to chemicals and fertilizers.

The lesson for the watershed coordinator is that women value sharing resources and concerns. Meeting other landowners or operators, and conservation professionals to talk about conservation goals connects them with people who share similar questions and maybe solutions.

For landowners who have not been actively involved in farming, a visit to the USDA office may be a little overwhelming. Unfamiliar with the jargon and the programs, if they are asked to pick a program, they may be lost.

The most important act a coordinator can take is to listen. Listen to the landowner's goals and passions. Don't assume that she is after reaping the most dollars she can get from her cropland or that all you have to do is find the right program for her. It may be that easy. Or, it may be more complicated.

Take one landowner who was working on a 75-year plan for her farm. Her concerns were long-term sustainability of the soil, restoring oak savannas and building a top notch grass-fed beef operation. As a coordinator you can help put that plan on paper, maybe provide information about programs or cost-share, or perhaps put her in touch with another landowner who has the same goals. This is no cookbook strategy.

Research from the USDA Women Land and Legacy project showed that women are more community- than commodity-oriented. In these four meetings, women shared their deep connection with the land and commitment to long-term productivity.

Your success as a coordinator depends upon listening to their specific goals and helping them find the resources — people, plans or programs — to achieve success as they define it.

Find more info at www.wfan.org.

Gallup poll shows Americans concerned about water quality

A poll conducted this spring by Gallup showed that water issues top Americans' list of environmental concerns.

The 2011 Gallup Environment Poll asked Americans how much they worry about different environmental issues. All four issues related to water quality garnered the most worry.

Contamination of soil and water by toxic waste and pollution of rivers, lakes and reservoirs bothered the most people, with 79 percent of respondents saying they worried "a great deal" or "fair amount" about each issue.

Drinking water pollution bothered 77 percent, while 75 percent worried about maintaining the nation's supply of fresh water.

Respondents showed a lower level of concern about air pollution, extinction of plant and animal species, the loss of tropical rain forests, urban sprawl and loss of open spaces, and global warming.

Gallup conducted phone interviews in March with a random sample of 1,021 adults in the continental United States. The poll carries a sampling error of 4 percent.

For full poll results, visit Gallup's website at www.gallup.com/poll/146810/water-issues-worry-americans-global-warming-least.aspx.

Teacher's externship helps high school science students use GIS

Water quality professionals know the importance of having the right tools available, like geographic information systems (GIS). Now environmental science students at Dowling Catholic High School in West Des Moines are learning that value too.

> GIS allows for students to critically think about and analyze data in ways that they wouldn't be able to without the software. RYAN LENSING, DOWLING SCIENCE TEACHER

Science teacher Ryan Lensing takes his students out onto campus to get real-world experience with GIS. They gather data with handheld global positioning system (GPS) units, analyze the data in the classroom and create maps and graphs with ArcGIS software.

"I want my students to get as much experience practicing real environment science as possible so they can apply the conceptual knowledge they learn to real life data," Lensing said." It allows for students to critically think about and analyze data in ways that they wouldn't be able to without the software."

Lensing introduces GIS at the beginning of the course, then integrates the tool into units throughout the year. The students' projects have ranged from assessing campus trees' risk to emerald ash borer and tracking streambank erosion to full analyses of how the Dowling campus has changed ecologically since the 1800s and an overall ecosystem analysis of campus prairie, woodland and sport field areas.

In the last example, students collected field data for temperature, relative humidity, solar radiation, plant biomass, plant biodiversity and insect biodiversity, which was tagged with latitude and longitude coordinates. Students have also conducted air quality analyses for major U.S. cities and tracked habitat changes that resulted from the construction of the Saylorville dam and reservoir using historic aerial images.

Students have responded to technology in the classroom. "Most already have a lot of experience using Google Earth, car GPS navigation systems or smartphone GPS apps so they pick up on the conceptual idea of GIS really quickly," Lensing said. "One of my favorite parts of using this equipment is when we begin translating their field data in the form of data tables into map layers that we can then work with and create models from. You hear a lot of 'that's so cool' — that is something that they have never had experience with."

School administration has responded as well. Students have presented reports on their findings to administrators, who would like to see GIS expand into other subjects like geography and social studies. A grant allowed Dowling to purchase a full-school ArcGIS license, and other Dowling science teachers have began using GIS in their lessons. And it all started with a summer externship.

Lensing was working towards his master's degree in science education at the University of Northern Iowa in 2009 when he signed up for an Iowa Math and Science Education Partnership externship. Looking for experience using GIS in an environmental science setting, IMSEP set Lensing up with the DNR's Watershed Improvement Program.

Lensing spent the summer collecting field data with DNR biologists Jason Palmer and Jennifer Kurth.

"I got the time to learn the basics of ArcGIS and I got a feel for how this program was used by this department. I learned specific techniques for collection of data in the field and I also learned a lot about the clean water act, Iowa watersheds, and also I got a chance to travel all over Iowa and see some new and beautiful places and meet some wonderful and interesting people," Lensing said.

"There would be no GIS in my classroom without it," he said of the externship. "Working with everyone at the watershed division is what sparked my interest and gave me the basic knowledge to implement and explore GIS in my curriculum."

ISU study pairs pastures with prairies

Native prairies that once covered almost the entire area between the Missouri and Mississippi rivers have now shrunk to less than 1 percent of Iowa's landscape.

Restoring some of those prairies, while maintaining Iowa's agricultural productivity, is the goal of ongoing research by Iowa State University researcher Diane Debinski and her colleagues.

Debinski, a professor of ecology, evolution and organismal biology, is working with pasture land in southern Iowa that for many years has been used for grazing.

The research explores techniques for restoring some of the native habitats and the associated birds, butterflies, caterpillars, and other insects and plants that go with them.

One of the components, grazing, is very common in Iowa. Another component, burning, has almost vanished in modern times.

"The project is motivated by trying to return to the natural disturbance processes that the prairie evolved under — fire and grazing," said Debinski.

Debinski says that prairie fires were a common part of Iowa's land in previous centuries. Whether started by people or by nature, the fires helped get nutrients back into the soil. Burning also helps reduce the invasion of woody species.

To reintroduce burning in ways that would be best for the soil, the grazing animals and the threatened species, Debinski and her colleagues are testing three different restoration processes using cattle grazing and fire to manage the prairie.

One method involves burning a different third of a pasture each year for a three-year period. Cattle will be allowed to graze on any part of the property. This method is called patch-burn grazing.

The second method involves burning an entire pasture every three years. This method will not involve grazing and is called burn-only.

The third method, graze and burn, involves grazing cattle on all areas of a pasture, and burning the entire area at the end of three years.

It is expected that the patch-burn grazing approach will produce more diversity in the vegetation structure compared to the other methods, and that this could be beneficial in promoting biodiversity.

The research is taking place at 13 sites on land owned by the Iowa DNR, as well as land owned by environmental groups and private landowners in Ringgold County in southern Iowa, and counties in northern Missouri.

"The reason we're doing this in southern Iowa is that it is hilly and historically hasn't been used as intensively for crops," said Debinski. "These lands have been used primarily for cattle grazing, so there was less plowing in the past, but the grazing has been intense."

By starting with land that has never been plowed, Debinski thinks the restoration is more likely to be successful.

In all the research pastures, the stocking rate — the number of cattle per acre — will be reduced to levels that are more sustainable, leaving more plant cover on the field, said Debinski.

Diane Debinski

Current grazing practices often leave pastures grazed down to the nub, leaving grass one-half to 1 inch tall, according to Debinski.

"There is an expectation that if you use a pasture for grazing, you might as well use all the grass, or you're wasting it," she said. "We're arguing that leaving more standing vegetation is not necessarily wasting the grass. Leaving something on the ground could provide a buffer in case of drought and it could also help reduce soil erosion associated with heavy precipitation."

"It's not a bad thing to leave some grass on the ground, and this will also provide habitat for other species," said Debinski. "Restoring the prairie will promote biodiversity of other species, including songbirds, pollinators, and a diversity of other insects."

The research has been going on since 2006 and the land has gone through a full, three-year cycle. At the end of a second cycle, Debinski and her colleagues hope to better understand how to improve the system.

Debinski is collaborating with a team including ornithologist Jim Miller, University of Illinois, Urbana-Champaign; rangeland ecologist Dave Engle, Oklahoma State University, Stillwater; sociologist Lois Wright Morton and project manager Ryan Harr, both from Iowa State University, along with graduate and postdoctoral students.

Article and photos courtesy of Iowa State University

Prairie fires, common pre-settlement, help get nutrients to the soil.

Open houses to answer questions on dam ownership, upkeep

With more than 3,900 dams in Iowa, proper maintenance is key to ensuring the safety and longevity of the structures.

To assist Iowans that own property with a dam — often a part of a farm pond or lake — as well as owners of larger dams, the DNR is hosting seven open houses across the state this summer in cooperation with the USDA Natural Resources Conservation Service.

The meetings kicked off June 21 in Marion and will help answer Iowans' questions about maintaining dams, constructing new ponds, fish management and stocking, regulations regarding dams, available technical and financial assistance, and water quality.

Those considering building a new pond or lake, as well as professionals who assist landowners with pond construction and maintenance, may also want to attend.

"We want dam owners and prospective dam owners to have the resources to keep their dams well maintained and to avoid long term degradation and compliance issues," said Jonathan Garton with the DNR's dam safety program.

"Unfortunately, we can't inspect every dam in the state, and have to focus on only the largest dams and those in poor condition. We want to reach out to owners on proper maintenance of dams to avoid future dam failures," Garton added.

Anyone interested in learning more about dam maintenance can stop by the following open houses any time between 3 and 7 p.m. to discuss their questions one-on-one with DNR and NRCS staff.

Open houses are listed below alphabetically by city:

Atlantic: Aug. 2, Rock Island Depot, 102 Chestnut St.

Fairfield: June 30, Fairfield Public Library, 104 West Adams Ave.

Lovilia: July 19, Lake Miami Meeting Facility, 1270 635th St.

Mount Ayr: July 25, Mount Ayr Rural Electric Coop, 1502 West South St.

Onawa: Aug. 9, Onawa Public Library, 707 Iowa Ave.

West Des Moines: July 12, West Des Moines Public Library, 4000 Mills Civic Parkway

If there is not an open house near you, DNR staff members are still available to answer your questions. Contact Garton at 515-281-6940 or Jonathan.Garton@dnr.iowa.gov or http://floodplain.iowadnr.gov.

Overcoming barriers to adopting no-till

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someone in your watershed that has a lot of knowledge about it," she said.

The same holds true for learning about making changes to existing equipment.

"With a lot of new equipment, there a lot of tweaks you can make for no-till," said Buckingham, whose family worked with an Ottumwa farmer when they switched to no-till. "Have your farmer talk to someone local to see what's working for them."

Field days also give farmers a chance to talk to someone knowledgeable about no-till and explain to them the benefits of the practice.

"Landowners are visual people, they like to see equipment and feel it," Buckingham said, suggesting that equipment be on display at a field day.

No-till can be a hard sell, especially in watersheds where financial incentives aren't available. Make sure to discuss the benefits of no-till and address any misconceptions that might be floating around the coffee shop.

"It's helps their bottom line, so that's a big incentive, and a lot of it is erosion, too," Buckingham said.

Online videos from Iowa Learning Farm can walk farmers through the process of switching to no-till, including planter adaptations. Find the videos at www.extension.iastate.edu/ilf/videos.

Iowa Learning Farms will also be hosting a number of field days this summer, including these focusing on no-till:

July 13, Elkader
July 27, Greenfield
Aug. 25, Boone County
Aug. 30, New Market

Details on the field days are available at www.extension.iastate.edu/ilf/events.

DATES TO REMEMBER

June 21-August 9: DNR and NRCS open houses for dam owners. http://floodplain.iowadnr.gov

June-September: Iowa Learning Farms field days. http://www.extension.iastate.edu/ilf/events

June-September: Iowa State Extension field days. http://www.ag.iastate.edu/farms/fielddays.php

June 24: Project AWARE registration due. www.iowaprojectaware.com

July 27-28: 2011 Midwest Construction Expo and Field Day, Melbourne. www.ialica.com

Sept. 7-8: Iowa Soil and Water Conservation District Commissioners Annual Conference, West Des Moines. www.cdiowa.org

How DNR water quality projects work

Anyone working to improve water quality knows it's not always a simple process, and understanding how different agencies work can sometimes be confusing as well. Here's how many different DNR programs work together to help Iowa meet the federal Clean Water Act. Public participation is important throughout the process.

Collect data

1. Determine intended uses

Staff investigate how Iowans use a waterbody — for recreation, supporting life or for drawing drinking water.

2. Set water quality standards

The intended use of a waterbody drives what standards it has to meet to protect that use. For example, streams that feed a drinking water supply must meet different standards than those used for boating.

3. Monitor waters

Test for pollutants at beaches and in streams and lakes.

Analyze data

4. Develop water quality lists

This includes the 305 (b) report and the impaired waters list, also known as the 303(d) list.

5. Write water quality improvement plans

Also known as total maximum daily loads or TMDLs, these plans calculate limits on pollution in specific waterbodies.

6. Write permits for point sources

Results of the TMDL set permit limits for those holding a National Pollutant Discharge Elimination System (NPDES) permit for discharging to a waterbody.

Conducting a stream assessment.

7. Write watershed plans

Data from the TMDL also helps the DNR determine priorities and target practices for improving nonpoint water quality in a watershed.

Implement plans

8. Put the plan on the ground

The plan is put in action, often combined with other implementation funding from DNR programs like lake restoration and other agencies like NRCS, IDALS and SWCDs, as well as by working with local landowners and communities.

9. Improve water quality

Watershed improvement (section 319) funding has significantly improved 42 Iowa lakes and nine streams.

CLEAN WATER STARTS WITH US

WATERSHED IMPROVEMENT IN IOWA

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