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CIG Update

The draft reports from the five land grant universities are in and we are busy compiling our recommendations into the final report for the CIG to NRCS. We are excited about the results of the three year multistate demonstration. The data shows reductions in flow have netted a reduction in nitrate loss downstream, which has the potential for significant environmental benefits. There have also been slight yield impacts.

Climate changes, specifically precipitation, will remain a variable constant in the statistical analysis. However we feel that the DWM practices have extremely positive environmental and economical benefits and we need to move forward with getting these practices in field.

Look for a summary of the CIG report on line at www.admcoalition.com.

ADMS Task Force Meeting

Dr. Wayne Skaggs commenced day one of the meeting with his presentation of Drainmod. Dr. Skaggs encouraged the application of Drainmod as a means of quantifying the practice and creating a baseline for trading through its modeling as requested in section 2709 of the 2008 Farm Bill. All agreed that there is no better fit than the members of the ADMS Task Force and ARS to find a method that meets this request so that estimates of impact can exist at field scale.

Day two answered the question "What does the task force mean to NRCS?" Sheryl Kunickis, National Agricultural Research Coordinator, USDA-NRCS, provided those in attendance with a brief history of the Task Force and its accomplishments. She used the term "relevant" when describing the group existence. Technically the group created Conservation Practice Standard 554, Drainage Water Management, within the past five years. Mary Ann Rozum, National Program Leader USDA-NIFA, reported on the key goals of USDA, the coexistence of biofuel production and an increase need for food supply, along with rural economic development. She spoke of grave concern for food security in the next decade and its direct relationship to water quality and quantity. She questioned the management of drainage by the producers and felt that sociologists and economists needed to be involved not only for assurance, but to determine implementation through theories of diffusion of innovation by a survey of methods. Much Discussion caused the Mississippi River Basin Initiative (MRBI) to be termed as a "last chance" to correct the environmental issues before the EPA makes it a regulatory matter. Steve Shafer, ARS encouraged the group to align itself with ARS strategic goals and maintain the message now that it has been heard. Doug Toews, NRCS presented the watersheds included in the MRBI and answered a number of questions in regards to monitoring. He also felt informing our leaders, especially about the CIG results, and setting installation goals in terms of number of acres were opportunities for DWM.

The members of the ADMS Task Force set up a plan of action for 2010 and beyond before adjourning.

It's Your Water

ADMC staff attended the 2010 Water Showcase at the St. Louis Hilton, MO on March 2-3. It was extremely encouraging to see all the groups meet and absorb each other's work as well as project solutions to rising concerns.

Keynote speakers represented Des Moines Water Works and USDA. Discussion was concentrated on providing solutions for management and policy.

The issues panel was a two-part panel. Representation on the broad issue panel included AgriDrain, Ag Clean Water Alliance, and NIFA. Each spoke of accomplishments and priorities. Water quality and quantity were addressed from various perspectives. The targeted issues panel showed specific instances where partnerships created successful outcomes.

Emerging issues were addressed by the USGS, EPA, and USDA, Ecosystem Services and Markets. Accountability and a verification process are key to environmental issues.

Thank you to the those who planned this well attended event.

Studies seek data to tie drainage water management to water quality trades

by Steve Werblow*

Growers can manage depth of their sub-soil moisture.

Drainage water management techniques are proving to reduce nitrate releases into ditches and streams. Now researchers and regulators are teaming up to see if the water quality benefits can be quantified so farmers can earn money by managing their tile drainage water. An aggressive research program in Ohio aims to expand the scope of nutrient flow research with drainage water management, and create a mathematical model to calculate the impact of drainage water management on nitrate and phosphorus losses to surface waters.

Controlled drainage, also called drainage water management, employs water control structures at the outlets of tile mains with removable stop logs, or weirs. Growers can set more stop logs in place to raise the water table beneath their fields in the summer, when crops can use the extra water, and in the winter when they need to reduce the amount of water and nutrients leaving the field. Removing stop logs in the spring and fall allows producers to lower the water table to allow for fieldwork, planting and harvest. In short, the system allows growers to actively manage their water table, both in terms of level and timing.

Controlled drainage has caught the eye of the US Department of Agriculture officials who are leading the charge to create a national water quality trading system. "In the past, tile drains were just a way to get water off the field," notes Carl Lucero, deputy director of the Office of Ecosystem Services and Markets in Washington, DC. "The advent of drainage water management allows you to keep water on your land. You're not just letting it flush those nutrients out of the system. With great timing, you can manage those nutrients. We're looking at an evolution, a next phase, at how we can optimize the water and nutrients in the system. "With the whole notion of trading, we've got to be able to know how well they work, to de-

fine and measure those conditions with a reasonable level of accuracy," he notes.

Building data bank

To answer those questions, soil scientists and drainage engineers are zeroing in on the relationship between conserving, or holding back, drainage water and reducing the amount of nutrients released into surface waters.

"If we can reduce the outflow from sub-surface drainage systems, then we can reduce the nitrate load," says Dr. Larry C. Brown of the Ohio State University in Columbus, Ohio, who has studied drainage water management systems with Dr. Norman R. Fausey of the US Department of Agriculture-Agricultural Research Service's Soil Drainage Research Unit in Columbus. "What we found out is that the nitrate load reduction is going to be proportional to the flow reduction on an annual basis. Nitrate is a soluble ion, and it moves where water moves. If we can reduce the off-farm flow of drainage water by 30 percent, then we can reduce the nitrate load by 30 percent."

One of the priorities of the research Brown and Fausey are conducting, in addition to their studies of controlled drainage throughout the Midwest and Southeast, is finding out where the nitrate is going. Brown says he and Fausey believe some of the nitrate is moving deeper into the soil profile, or moving laterally through the soil.

Brown adds that conserving drainage waters during the non-growing season may allow more time for the soil to become satiated. That means water fills more of the small pores and cracks in the soil, not just the larger ones.

Tradable commodity

Once those relationships are solidified and models are perfected to predict the performance of future drainage water management systems, the process could be accepted into water quality trading pro-

grams like the one being piloted in Ohio's Great Miami River watershed.

That trading program, developed and administered by the Miami Conservancy District (MCD) of Dayton, Ohio, already has 49 projects in various stages of implementation, and is predicted to reduce nutrient loads in the watershed by 652,000 pounds, according to Dusty Hall, the district's manager of program development. Buyers have paid an average of \$1.44 per pound of nutrient reduction, he adds.

Hall says MCD sees tremendous potential in drainage water management as a tool for farmers interested in selling water quality credits. "We can tell you right away that we can essentially cut the discharge in half," Hall says. "That would make it a no-brainer. The problem was that the model we currently use to calculate the commodity, nutrient reduction, doesn't address the practice." The lack of an accepted model for calculating nutrient reduction spurred MCD to team up with the Ohio Department of Natural Resources, the Ohio State University, the USDA-ARS Soil Drainage Research Unit and the Shelby Soil and Water Conservation District (SWCD) to install four drainage water management systems in the Great Miami watershed. Each control structure will govern water levels beneath 20 to 25 acres of cropland. Those controlled drainage plots are positioned beside free-drainage parcels. In addition to studying nitrate leaving the controlled and free-drainage plots, the group decided to expand the study to include phosphorus, too. "Primarily in the past they've been focusing solely on nitrate," notes Jason Bruns, district administrator for the Shelby SWCD in Sydney, Ohio, who is overseeing the installation. "This time, we're adding another search parameter. We're going to pull samples on a bi-weekly basis during the growing season. We're looking for more concrete information, especially on phosphorus, to build a controlled drainage module into their trading program."

The data will be the basis for a new module of Ohio's Pollution Load Reduction Model, often called the "spreadsheet model," due for release in 2010.

The Ohio Department of Natural Resources is also helping support a drainage water management study in the northwestern part of the state through the Lake Erie Conservation Reserve Enhancement Program (CREP). Ohio is also one of five Midwestern states in which university and USDA scientists are observing 20 demonstration sites that put

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field-scale controlled drainage systems side-by-side with free-flowing tile systems. Those demonstration sites are being coordinated by the Agricultural Drainage Management Coalition, a nonprofit consortium of drainage professionals and researchers based in Owatonna, Minnesota.

Yield impact

Brown, like his fellow researchers carefully watching the demonstration sites throughout the Midwest, is eager to see whether drainage water management boosts yield. He points out that it's a difficult question to answer. "After one cropping season, we've had one site, possibly two, that's shown a small percentage yield increase," he says. "There are some studies that haven't, or at least the yield variability is so great we can't tell. We're looking at least at two more summers before we can say with some confidence whether there's an effect on yield."

Data on both the yield effect and the water quality effect of drainage water management will have dramatic impacts on the economics of drainage water management, notes Charlie Schafer of Agri-Drain in Adair, Iowa, and president of the Agricultural Drainage Management Coalition. "What it has to boil down to for a producer is, 'what's in it for me?'" Schafer says. "We've seen yield increases in the field. That's value. When we can quantify water quality benefits, these projects could receive more cost-share funds under state and federal environmental programs. That's more value. And if we can use an accepted model to show that a particular system reduces drainage by, say, 4.5 inches of water per acre, that's a little over one million pounds of water. A nitrate level of 20 parts per million (ppm) in one million pounds of water is 20 pounds of nitrate per acre. That 20 pounds of nitrate per acre could be a tradable commodity when more water quality trading programs are in place."

Boosting the economic benefits of drainage water management systems could spur the adoption of an important management practice, says John Kessler, deputy chief of soil and water resources for the Ohio Department of Natural Resources in Columbus, Ohio. He points out that the impact of reducing nutrient loading in Ohio can be felt in the Great Lakes to the north and all the way down to the Gulf of Mexico to the south, where excess nutrients from a variety of sources, including farms, contribute to a low-oxygen hypoxic zone that threatens aquatic life. It's a problem growers can help address. "We want to be a constructive player in nutrient reduction," Kessler says. "For producers who have the right terrain and drainage systems, we see controlled drainage as a practice that could be economically beneficial and could also provide some water quality improvement. It's one tool that will slow the water down and slow the nutrient load down, plus it helps producers have water available when they need it. It's right in there with conservation tillage and buffer strips and other best management practices.

"We're looking for these win-wins that benefit the environment and the farms," he adds. "This seems like one of them."

** This story was submitted by Steve Werblow on behalf of the Conservation Technology Information Center, based in West Lafayette, Indiana and was published in Drainage Contractor 2010.*

Studies seek data continued



Ohio is one of five states in the Midwest taking part in a 20-site demonstration, observing field-scale controlled drainage systems side-by-side with free-flowing tile systems.

ADMC Annual Meeting

ADMC held its annual meeting on March 2nd, 2010 in conjunction with the ARS/USDA water showcase at the St. Louis Hilton, Missouri.

President of ADMC Charlie Schafer shared with those in attendance that our involvement with different partners to promote DWM to policy makers, environmental organizations, and the agricultural industry is our continued focus area for the coming year. We have concluded the multi-state demonstration and have collected data from the sites to substantiate what was thought to be the outcome. Agriculture stands to be one of the leading solutions to the current water quality issues if the practices are designed, planned and installed properly.

Mark Dittrich, Minnesota Department of Agriculture gave insight on the findings of the different sites in MN showing reductions ranging from 0-75% and incidental yield increases of up to 4% per acre. With numbers like those we need to take action to educate our audience so that these practices will be installed.

With the help of producers, we hope to continue to collect data on several of the sites in the years to come.

There will be a DWM training workshop again this year where contractors will be able to become certified for planning and design of DWM projects. This is a giant step in the right direction for cost-sharing DWM practices. It is important that we become educated so that the most suitable practices are installed in the field and managed effectively to maximize the environmental and economic benefits.

Leonard Binstock, Executive Director ADMC, will be retiring this year. We appreciate his work and wish him and his wife many wonderful years.



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***A Public / Private Partnership
Improving America's Water
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Water Management***

Upcoming Events

July 13-17, 2010

LICA National Summer Meeting
Peoria, IL

July 18-21, 2010

65th Int. SWCS Annual Conference
St. Louis, MO

August 1st, 2010

Erosion Control Workshop
Champaign/Urbana, IL

August 28th, 2010

Iowa Corn Growers Association Annual Meeting
Des Moines, IA

September 20-22nd, 2010

Plastic Pipes XV Conference 2010
Vancouver, BC

Welcome our new member
Precision Drainage & Excavating, Inc.