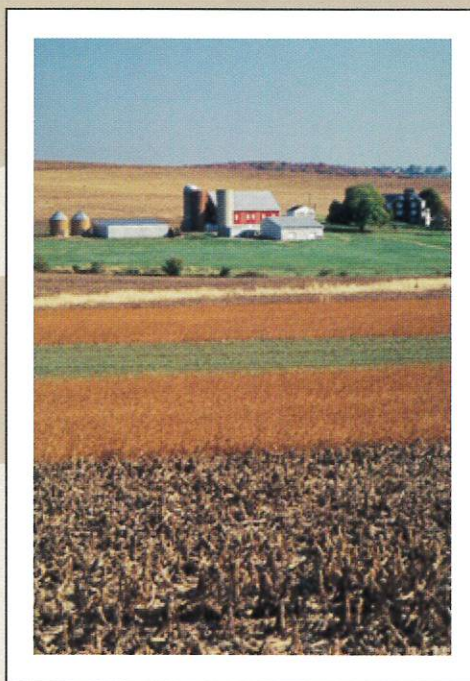


ACWA

Agriculture's Clean Water Alliance

2001 Progress Report

Agriculture's Clean Water Alliance (ACWA) is a group of 11 agribusiness retailers in the Raccoon River Watershed. Business leaders from each of these organizations, which sell most of the fertilizer used by farmers in the watershed, are members of ACWA. The



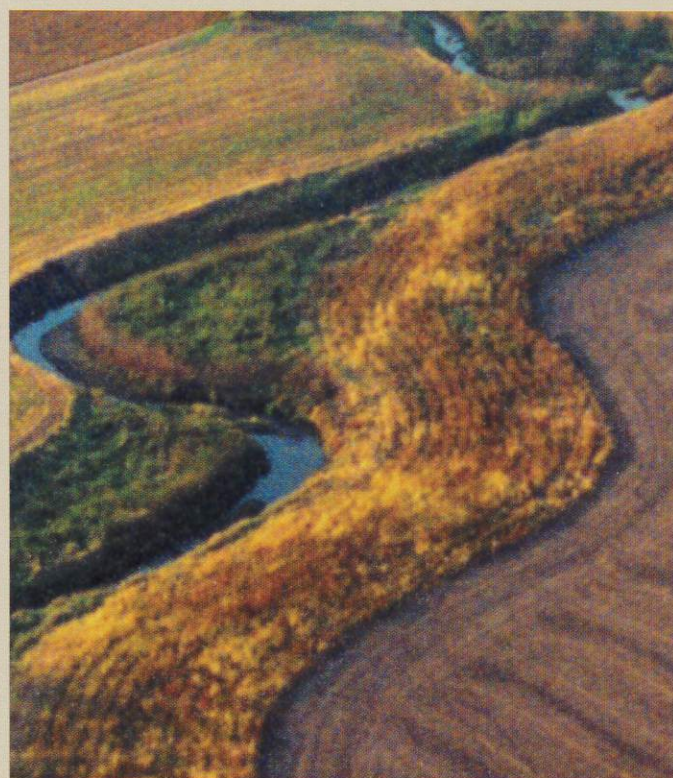
ACWA members act in concert to coordinate actions aligned with the mission of ACWA. The establishment of ACWA is central to the belief that farmers and businesses working together can successfully reduce nitrate levels in the Raccoon River Watershed.



ACWA
Agriculture's Clean Water Alliance

OUR MISSION

To reduce the nutrient loss—specifically nitrate—from farm fields and to keep the nutrients from entering the Raccoon River and its tributaries.



Thank You

The ACWA Board of Directors wishes to thank its partners and all volunteers who share the common interest to improve water quality in the Raccoon River Watershed.

In unity, ACWA members are pursuing efforts to improve water quality in the Raccoon River through application of sound agricultural practices. ACWA members work with watershed area farmers providing them with information about the watershed, sound management advice and products that improve the performance of management practices. The vision is to help farmers apply the best agronomic science on farms in the watershed.



ACWA Member Board

Ag Partners LLC, Albert City
Steve Becraft

Dedham Cooperative Assoc., Dedham
Roger Shaw

Farmers Cooperative Co., Farnhamville
Roger Koppen

First Coop Assoc., Cherokee
Jim Carlson

Heartland Co-op, West Des Moines
Larry Petersen

New Coop, Inc., Fort Dodge
Brent Bunte

Newell Coop Elevator, Newell
Jim Schnedt

Pro Coop, Gilmore City
Rolly Svoboda

UAP, Wall Lake
Jay Brown

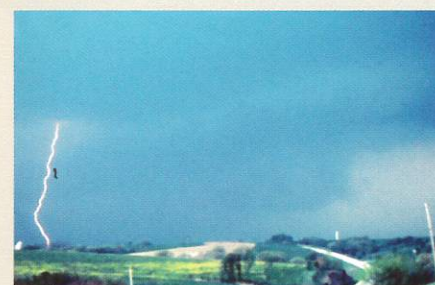
Van Diest Supply, Webster City
John Van Diest

West Central, Ralston
Jeff Stroberg

Mother Nature and Landform Influence High Nitrates Along the Raccoon River

Agriculture's application of nitrogen needs continuing study to determine impact on nitrate levels in the Raccoon River according to a study sponsored by Agriculture's Clean Water Alliance.

Mother Nature has a great deal of influence on high nitrate levels in the Raccoon River.



Findings gained from the multi-year water monitoring program along the Raccoon River showed the best current predictor of nitrate concentration is the river's water flow and landform type. And, although there are many sources contributing and other factors to consider, nitrate levels in the Raccoon River are a primary concern for agricultural business leaders who sell much of the fertilizer used by farmers within the 2.3 million acre watershed.

Over the last three years, weather conditions ranged from above average rainfall to near drought conditions for the Raccoon River, which is comprised of three major tributaries, the North, Middle and South Raccoon that flow across west central Iowa.

Analysis of the data found that nitrate concentrations in tributaries differed between the unique landforms of the watersheds and were influenced by river flow rates.

The tributaries drain two primary landforms; the flat, glaciatic area known as Des Moines Lobe in the north central

part of the state and the more hilly, well-drained area known as Southern Iowa Drift Plain. The North Raccoon is in the Des Moines Lobe region. This landform has little natural drainage. Much of the water quickly drains to surface waters through extensive tile drainage systems.

The Raccoon River is the primary source of water for the Des Moines Water Works, which services more than 370,000 customers in central Iowa. Nitrate-N concentrations in the Raccoon River regularly exceed the 10 mg/l nitrate-N drinking water standard during several months most years. In 1992, Des Moines Water Works installed a nitrate removal facility to treat the water.

This is the type of information ACWA members were hoping to find as it provides a better baseline of the condition of the water within the watershed. ACWA is continuing sponsorship of the water monitoring program to help focus future action and to begin to track changes due to changing agricultural practices. Continuing study will be needed to determine the true level of impact such as cause and effect of farmers changing their fertilizer management.

Last fall, ACWA actions included promoting better timing of fall applied anhydrous fertilizer. ACWA members agreed to adopt and adhere to a policy by which soil conditions, including soil temperatures, guide decisions on when to apply nitrogen. This action resulted in very little fall anhydrous fertilizer applied to farm fields in 2000 for crop year 2001, as soil conditions were not suitable. This policy will continue for the fall of 2001.

The ACWA wants to insure that a 'sound science' approach is used in determining the source of impurities and the solutions needed to decrease those impurities. By acting in concert, ACWA members and their customers will have a larger impact in developing and executing plans that can have an impact.

HIGHLIGHTS



Landform affects the amount of water that runs into a tributary.

- ❖ **Monitoring N levels in the Raccoon River over time provides important insight into the influences of weather and landscape interactions.**
- ❖ **Analysis of monitoring data found that the North Raccoon River tributary is the dominant contributor to nitrogen loadings in the Raccoon River.**
- ❖ **Concentrations in the Raccoon River regularly exceed the 10-mg/liter nitrate - N drinking water standard several months most years.**
- ❖ **Scientific uncertainty remains about specific impacts of changing fertilizer practices and the impacts on water quality.**
- ❖ **New programs and continuing study are needed to determine and quantify performance of changing management practices.**



Monitoring water helps us understand impacts of changing land management practices.

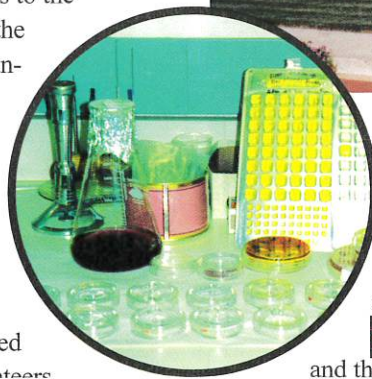
ACWA

Agriculture's Clean Water Alliance

In unity, ACWA members are pursuing efforts to improve water quality in the Raccoon River through application of sound agricultural practices. ACWA members work with watershed area farmers providing them with information about the watershed, sound management advice and products that improve the performance of management practices. Our vision is to help farmers apply the best agronomic science on farms in the watershed.

ACWA and Des Moines Water Works

The Agriculture's Clean Water Alliance (ACWA), working in partnership with the Des Moines Water Works, sponsored an on-going water monitoring program in the Raccoon River watershed in 2001. ♦ Water monitoring in the Raccoon River watershed has provided data and information leading to a better understanding of water condition and geography of the watershed. A dedicated corps of volunteers collecting water samples has connected watershed residents to the resource. ACWA recognizes the value-added aspects that volunteer water monitoring have had in the Raccoon River watershed. Key to this effort is the coordination of over 50 volunteers who include farmers, FFA chapters, students, local county extension offices and interested private citizens. ♦ Volunteers



of the watershed) exceeded the EPA drinking water maximum contamination level (MCL) of 10 mg/liter nitrate-N during all or most of the sampling period.

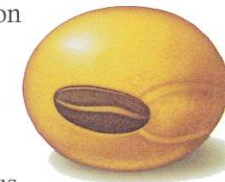
♦ In December, ACWA and the Des Moines Water Works

Vista County to network and interact with other volunteers from Dallas and Greene County. When asked the reasons they wanted to participate in the water monitoring effort they had many including: to be involved, to have an impact, to have fun, to learn something, and because they are committed to making a difference.



ACWA's Code of Practice for Fall Nitrogen Fertilization

In fall 2001, ACWA announced its commitment to a Code of Practice for Fall Nitrogen (N) Fertilization. This came as harvest was about to commence, and the season for fall application of anhydrous ammonia was quickly approaching. ♦ Many farmers consider fall application of anhydrous ammonia an attractive option for N management. These farmers often site reduced potential for soil compaction and spreading work loads so favorable spring days can be used for planting, thus reducing the chance of getting the crop in late, which may result in lower yields. Yet, the impact from agricultural application of N on receiving water resources is gaining increased attention from local, regional and national levels.



Effective management of N on farms is key to enhancing both environmental quality and profitable crop production in the Raccoon River watershed. ♦ The

purpose of ACWA's Code of

Practice is to establish reasonable and practicable guidelines that members follow regarding fall N fertilization. The application guidelines are straightforward.

♦ The guidelines include reviewing and



using information provided by Iowa State University about the fate of applied N and standardized county soil temperature and forecast maps. ACWA members are committed to



delaying anhydrous ammonia applications until soil temperatures are 50 degrees F, trending lower, without a nitrification inhibitor, or 60 degrees F, trending lower, with use of a nitrification inhibitor in a manner consistent with manufacturers label directions. ♦ The Code of



Practice fits with the ACWA mission to reduce the nutrient loss – specifically nitrate – from farm fields and to keep the nutrients from entering the Raccoon River and its tributaries.




KEYS TO SUCCESS:

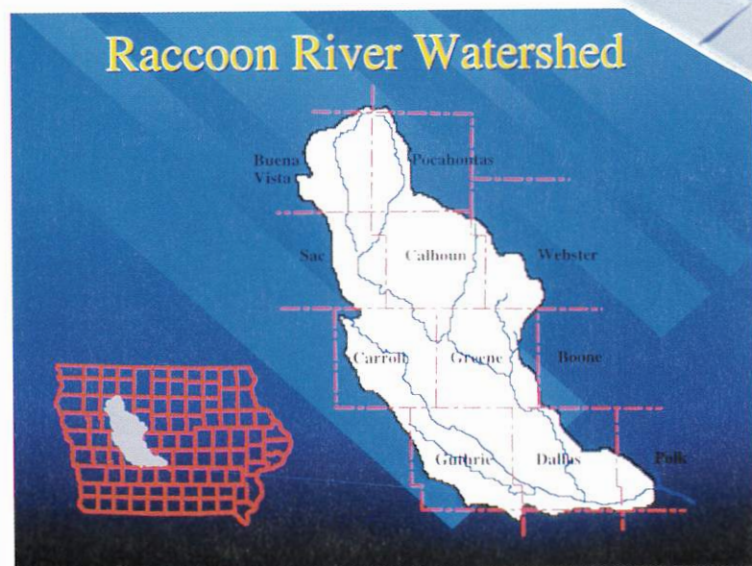
♦ Profitable production agriculture and improving environmental quality are not mutually exclusive goals.


♦ Effective management of nitrogen on farms


private citizens.  volunteers mobilized to collect water samples on a bi-weekly schedule, April through August. The volunteers followed a sample collection protocol, documented information and collected samples from 42 remote sites. Sample sites are located near outlets of stream tributaries along the Raccoon River. Samples were transported to Des Moines and analysis was done at the water quality laboratory of the Des Moines Water Works.  Analysis of 2001 data shows average nitrate concentration distribution from 28 subwatersheds nested within the Raccoon River watershed. The results for this year are similar to previous analysis, which illustrate nitrate concentration is closely related to landform, land use and rainfall. All streams within the Des Moines lobe landform region (north and eastern side


held the first Raccoon River Watershed Volunteer Appreciation Dinner. This was an opportunity to thank the volunteers for their support and participation with the water monitoring program. During the event, results from the 2001 monitoring program were shared and plans for 2002 program were introduced. Awards and certificates of appreciation were presented to volunteers.  The event enabled volunteers who collected samples in Buena

Stewart Baldner, farmer near Dallas Center, uses information and service leading to better decision-making and management of fertilizer.

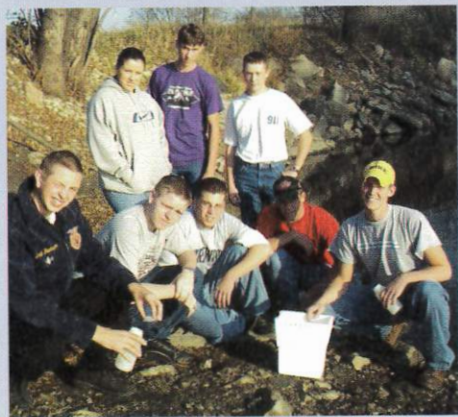


 *ACWA members' commitment to helping farmers is key to achieving success in the Raccoon River watershed.*

 *By acting in concert, ACWA members and their customers will have a larger impact in developing and executing plans that can have an impact.*

 *Applying a problem solving approach, putting to work the best agronomic science and working cooperatively with partners presents the best opportunity to make real progress.*

Southern Cal Students Take Learning to the Banks of the Raccoon



Southern Cal FFA students key to water monitoring program.

To bring lessons of the classroom and current issues into sync, Matt Carlson, FFA advisor and vocational agriculture instructor at Southern Cal High School in Lake City, Iowa, incorporated volunteer water monitoring into his curriculum. Carlson learned about the volunteer water monitoring program a few years ago and knew he should get his students involved. For the past two years, Carlson's students have sampled water from the Raccoon River and five tributary stream sites. Carlson tied this project and

the study of water, soil and nitrates into the curriculum of all his agronomy classes. "You can always teach from a textbook. Yet we have such important current events all around us. The students need to be aware of and attempt to understand them," says Carlson. "Since we're located so close to the Raccoon River and its tributaries, it provides an ideal opportunity to learn more about what's happening in the water and the watershed." Nitrate concentration levels in the Raccoon River were provided by ACWA to the Southern Cal classes. This data provided

Carlson and his students the chance to gauge the results of past years compared to the results the class assisted in generating. "Over the past two years of participation in the sampling program, we've been able to monitor how rainfall affects the nitrate levels in the water. Two summers ago, when there was a great deal of rain in May, we really saw the nitrate levels in the streams and river shoot up. Then, in July of the same year when there was not much rain, we had to go right into the water to extract samples. At that time, the nitrate levels were



quite low," says Carlson. Carlson plans for his classes to continue participating in the volunteer water monitoring program. "The students who have participated have graduated and a new group has come in," says Carlson. "They need to gain this real-life experience as well."

ACWA Members

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First Coop Assoc.,
Cherokee
Jim Carlson

Heartland Co-op,
West Des Moines
Larry Petersen

New Coop, Inc.,
Fort Dodge
Brent Bunte

Newell Coop Elevator,
Newell
Jim Schnedt

Pro Coop,
Gilmore City
Rolly Svoboda

UAP,
Wall Lake
Jay Brown

Van Diest Supply,
Webster City
John Van Diest

West Central,
Ralston
Jeff Stroberg

**For more information,
call 1 800-797-4322
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ACWA
Agriculture's Clean Water Alliance

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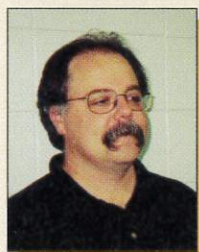
ACWA: Where to next ...



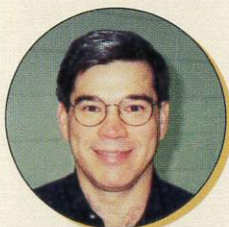
L. D. McMullen,
CEO and general manager
of the Des Moines Water
Works



Dennis Pate
Assistant State Conservationist
Iowa Natural Resources
Conservation Service



Tom Isenhardt
CREP coordinator
Iowa Division
of Soil Conservation,
Iowa State University



Jerry Hatfield
Director, USDA National
Soil Tilth Laboratory

Agriculture's Clean Water Alliance met Nov. 12, 2001, to discuss the next steps in their pursuit of better water quality in the Raccoon River watershed. The meeting, held in Farnhamville, Iowa, featured four speakers addressing water quality, watershed and nitrogen management research, Iowa's new Conservation Reserve Enhancement Program (CREP) and conservation assistance programs.

L. D. McMullen, CEO and general manager of the Des Moines Water Works, thanked ACWA for supporting water monitoring in the Raccoon River watershed, reviewed findings of analyses of water quality and provided suggestions for future collaboration. The water utility receives source water from both the Des Moines and Raccoon Rivers. Information illustrating annual average nitrate concentration trends for the past 27 years showed levels have gradually increased in the Raccoon, while trends remained stable in the Des Moines River.

McMullen encouraged ACWA to continue support for water monitoring and focus on helping farmers participate in programs that reduce nitrogen losses in the watershed such as Iowa's new CREP.

Dr. Jerry Hatfield, director, United States Department of Agriculture (USDA) National Soil Tilth Laboratory, presented watershed and nitrogen management research results. New learn-

ing about relationships between water use and nitrogen use efficiency in corn plants provides insight into addressing water quality, while helping farmers be profitable. Studies continue and information will help ACWA and partners develop programs to put science to work on farms in the Raccoon River watershed.

Dr. Thomas Isenhardt, CREP Coordinator, Iowa Division of Soil Conservation and Iowa State University, presented Wetland Restoration for Water Quality Improvement in Agricultural Watersheds. Isenhardt reviewed research providing scientific foundation for Iowa's new CREP. Past research and demonstrations illustrate wetlands ability to remove nitrogen from tile drainage water. CREP is a local, state, federal and private partnership to provide incentive payments to landowners to voluntarily establish wetlands for water quality improvement. Isenhardt emphasized CREP wetlands must be targeted and designed to reduce nitrate loading. He emphasized CREP can complement other programs to reduce nutrient loss.

Dennis Pate, Assistant State Conservationist, USDA Natural Resource Conservation Service, shared concepts for conservation planning. The basis of better working land management in the watershed starts with site-specific plans that must be developed on-site with producer clients. Future incentive programs to assist producers with conservation application will

need plans to participate. Pate encouraged coordination among ACWA, local Soil and Water Conservation Districts and agency staff recognizing the organizations share the same clientele, and missions for water are similar. Pate concluded with a call to action for ACWA members to directly interact with producers to develop and implement nutrient management plans on their farm.

With unity of purpose the ACWA Board of Directors approved a 2002 Operating Plan. The plan for 2002 continues support for current programs and policies, such as:

- continuing the volunteer water monitoring network
- conformance with the ACWA Code of Practice for fall N fertilization
- communicating with 9000+ member farmer customers about watershed information
- expanding opportunities for accessing programs like the CREP wetlands. In addition, resources are committed for developing new program initiatives consistent with ACWA's mission. New programs, likely to be supported via grants, involve working with the National Soil Tilth Laboratory, Natural Resources Conservation Service and local Soil and Water Conservation Districts to coordinate research activities as well as supporting planning activities and actions on farms and key sub-watersheds in the Raccoon River watershed.