



**ACWA**  
Agriculture's Clean Water Alliance

# 2022 ANNUAL REPORT



MAKING **CONSERVATION**  
RETAIL **REAL**



# LEADERSHIP AND MEMBER ENGAGEMENT

## WORK GROUPS

ACWA Work Groups are essential to implement the organization’s Work Plan for the fiscal year. The three work groups — Membership Services, Outreach and Communications, and Projects and Programs — are united in their goals to advance ACWA’s mission and vision. ACWA Work Groups are also a great way to get members involved and have a voice on the direction of efforts and outcomes within our programs and projects. These groups also help ACWA expand awareness of who we are and what we do, along with recruiting and retaining members across Iowa.

### Membership Services Work Group

- 2022 Members**  
 Molly Toot, *Landus Cooperative (Chair)*  
 Dan Dix, *NEW Cooperative*  
 Joe Olson, *Helena*  
 Lance Heikens, *Van Diest Supply Company*  
 Gregg Schmitz, *Nutrien Ag Solutions*  
 Jacob Aizikovitz, *Koch Fertilizer, LLC*  
 Dave Schwartz, *Verdesian Life Sciences*

**Membership Services accomplishments**

- Developed a list of potential members; enlisted new and associate members, including affiliate sponsors
- Reached out to current members and potential new members through targeted calls and personal visits
- Developed an Annual Conference and other networking opportunities for improved member engagement

### Programs & Projects Work Group

- 2022 Members**  
 Thomas Fawcett, *Heartland Co-Op (Chair)*  
 Brent Hall, *Truterra/Land O’Lakes*  
 Clint Sires, *AgState*  
 Derek Hommer, *Nationwide*  
 Dewey Petersen, *Nutrien Ag Solutions*  
 Jacob Aizikovitz, *Koch Fertilizer LLC*  
 Dan Dix, *NEW Cooperative*

**Programs & Projects accomplishments**

- Sought grant funding to expand and continue support of the conservation agronomist network in Iowa
- Proposed changes to the Code of Practice and reporting system
- Reviewed and developed a plan to engage members in the ACWA water monitoring program and the data collected
- Developed sales agronomist and conservation agronomist resources and programs



Welcome to the Agriculture’s Clean Water Alliance 2022 Annual Report. This publication highlights the significant strides ACWA has made over the last year, segmented by our three Core Pillars: Leader & Advocate, Innovate & Sustain, and Science to Solutions. With new members, new collaborators and an expanding conservation agronomist network, ACWA continues to make a positive impact for Iowa farmers, landowners and urban citizens. We’re proud to share these accomplishments with you.

—Roger Wolf, *Executive Director*

## CONTENT

**Pillar: Leader & Advocate**

Leadership and Member Engagement .....3  
 Collaboration with Partners .....5  
 ACWA Members and Associate Members.....6

**Pillar: Innovate & Sustain**

Conservation Agronomist Network .....8  
 North Raccoon Farm to River Partnership..... 10

**Pillar: Science to Solutions**

Water Monitoring ..... 12  
 Code of Practice..... 14  
 FY2022 Finances ..... 15  
 ACWA Footprint Map .....back cover

**On the cover:** ACWA members encourage using agricultural practices that can help improve water quality and soil health. Clockwise from top left: Conservation Agronomist Ruth McCabe (right) visits a CRP field with farmers to discuss other practices they could implement for improved productivity and environmental stewardship; a restored river oxbow can be used to reduce flooding and benefit wildlife habitat; precision nutrient management can save farmers money on input costs and reduce excess nutrients on the ground; cover crops are being used to reduce soil erosion from wind and water, improve soil organic matter and water infiltration.

## Outreach & Communications Work Group

### 2022 Members

Eric Scherder, *Corteva agriscience (Chair)*  
 Gary Moritz, *NEW Cooperative*  
 Jennifer Ohlendorf, *AgState*  
 Kristin Schmit, *Heartland Co-op*  
 Elizabeth McOllough, *Gold Eagle Coop*  
 Gracie Vathauer, *Pro Cooperative*  
 Eric Moon, *Nutrien Ag Solutions*  
 Joe Olson, *Helena*  
 Joel Abbott, *Van Diest Supply Co.*  
 Mary Harrington, *Landus*  
 Michelle Jones, *Koch Fertilizer LLC*  
 Shannon Textor, *Iowa Corn Growers Association*  
 Aaron Putze, *Iowa Soybean Association*  
 Steve Ferreira, *Nationwide*  
 Matt Lail, *Verdesian Life Sciences*  
 Mark Vanderlinde, *Truterra/Land O'Lakes*  
 Rebekka Jones, *Iowa Agriculture Water Alliance*

### Outreach & Communications accomplishments

- Continued to work, identify, and engage ACWA members communication teams to broaden the ACWA outreach efforts to all customers
- Progressed with delivering a quarterly newsletter with multiple topics that can be showcased by ACWA members in their own newsletters and other outreach methods
- Developed member profiles for multimedia use to actively highlight and promote member engagement and delivery on ACWA's mission & vision
- Provide support to Membership Services and Programs & Projects work groups



## AWCA EXECUTIVE COMMITTEE

ACWA's Executive Committee are the elected officers of the ACWA Board of Directors. This committee exudes strong leadership on behalf of the board, striving to advance ACWA's mission and vision through its by-laws, organizational structure, work plan, and work groups.



**Dan Dix, President**  
NEW Cooperative



**Molly Toot, Vice-President**  
Landus Cooperative



**Thomas Fawcett, Treasurer**  
Heartland Co-op



**Joe Olson, Secretary**  
Helena Agri-Enterprises LLC



**Harry Ahrenholtz, ACWA Chairman**

## COLLABORATION WITH PARTNERS

Within the 2022-23 fiscal year, ACWA prioritized collaboration with our partners and like-associations within the ag retail industry. These relationships helped to create awareness and engage with other organizations, farmers, media, and Iowa residents.

ACWA was proud to sponsor and support a **4R Stewardship Field Day** on August 29, 2022, at Kirkwood Community College in Cedar Rapids. More than 115 people attended the event including farmers, ag retailers, industry representatives, and students from Kirkwood's Agricultural Science Program. Some of the topics covered at the field day included managing manure nutrients, regenerative nutrient sources, and the Iowa Nitrogen Initiative.

Over the course of the fiscal year, ACWA leaders met with Bill Northey, CEO of the **Agribusiness Association of Iowa (AAI)**, and Ben Gleason, Executive Director of the **Iowa Nutrient Research & Education Council (INREC)**, to find avenues where the organizations could collaborate.

ACWA increased its outreach efforts by sponsoring AAI's Agribusiness Report television segment, which is shown regularly on WHO-TV, Des Moines; KCRG, Cedar Rapids; and KYOU, Ottumwa-Kirksville. The 30-second advertisement aired more than 65 times, reaching 70 counties in Iowa and northeastern Missouri. ACWA also contributed topics for the Report related to ag retail, and the organization's efforts for cleaner water and healthier soils.

Additionally, ACWA sponsored and was an exhibitor at AAI's 2023 Agribusiness Showcase held February 14-15 in Des Moines. Through this event, ACWA members were able to meet and talk with several organizations about ACWA's mission, vision, membership, along with activities within its programs and projects.

## LOOKING AHEAD

### Forming New Relationships

ACWA is teaming up with the Soil and Water Conservation Society (SWCS) and will be an exhibitor at their 78th International Annual Conference, which will be held in Des Moines, Iowa, August 6-9, 2023. ACWA is also excited to collaborate with SWCS on a conference on implementing, managing, and supporting ag retail conservation and conservation agronomist within the ag retail sector. This conference will be held in February 2024.

4R Plus



**AGRIBUSINESS**  
ASSOCIATION OF IOWA



Kristen Dearden, who oversees ACWA membership services and communication, sets up for AAI's Agribusiness Showcase and Conference, held in the Varied Industries building on the Iowa State Fairgrounds, Des Moines.



Pillar:  
Leader &  
Advocate

## ACWA MEMBERS

### AgState

Cherokee | [agstate.org](http://agstate.org)



AgState was formed in 2021, but the cooperative has been in existence collectively for more than 100 years. AgState has locations in 14 northwest Iowa counties, most of which sit above the watersheds in the Iowa Nutrient Reduction Strategy. The company believes in long-term sustainability and is proud to be a founding member of ACWA.

### Gold-Eagle Cooperative

Goldfield | [goldeaglecoop.com](http://goldeaglecoop.com)



Gold-Eagle Cooperative is a founding member of ACWA. It was formed in 1908 as Farmers Elevator Company of Goldfield. In 1983, Farmers Elevator merged with Farmers Cooperative Company of Eagle Grove to become Gold-Eagle Cooperative. Since then, they have expanded to include 16 locations in central Iowa. The company serves farmers in Wright, Humboldt, Kossuth and Hancock counties in the heart of the Boone River watershed.

### Heartland Co-op

West Des Moines | [heartlandcoop.com](http://heartlandcoop.com)



Heartland Co-op serves farmers in 70 locations across Iowa as well as in Nebraska and Texas. It was established in 1987 through a merger of cooperatives in Panora, Dallas Center, Minburn and Granger. Its origins are truly centered in Iowa's heartland, amid the Raccoon and Des Moines river watersheds, a main focus of ACWA. The company is a founding member of ACWA and has helped the organization become the leader in water quality that it is today.

### Helena Agri-Enterprises, LLC

West Des Moines | [helenaagri.com](http://helenaagri.com)



Headquartered in Tennessee, Helena Agri-Enterprises, LLC has been part of ACWA since the beginning. Helena has seven Iowa retail locations and a wholesale group in Ankeny that serves retailers in Iowa and the surrounding states. Helena offers an array of crop inputs including fertilizer, seed, and chemicals as well as soil and tissue sampling, yield analysis, variable rate application recommendations, custom applications, and more. A subsidiary, Helena Industries, LLC includes a facility in Des Moines that manufactures their products.

### Landus Cooperative

Ames | [landuscooperative.com](http://landuscooperative.com)



Iowa's largest agriculture cooperative, Landus is a founding member of ACWA. It has been known as Landus since 2016, but the company's agricultural roots go back more than 130 years. Landus offers products and services for all aspects of farming: agronomy, grain, feed, animal nutrition and data. The company is in 23 counties, mostly in the Des Moines and Raccoon River watersheds and above the Cedar River watershed. Landus is part of the Farm to River Partnership, an Iowa Water Quality Initiative (WQI) led by ACWA.

Being a part of ACWA has helped us recognize the need for ag retail's involvement in the conservation space. This led to forming our own conservation department to meet the needs of our farmers with agronomic support and to increase conservation practice adoption across our trade area.

—Tom Fawcett, Heartland Co-op

### NEW Cooperative, Inc.

Fort Dodge | [newcoop.com](http://newcoop.com)



A founding member of ACWA, NEW Cooperative began in 1973 by farmers in Northeast Webster County, creating its acronym name. The new business was a merger between one cooperative with rail capabilities and one with additional grain for the outgoing trains. Since then, NEW Cooperative has grown to 60 locations in 19 counties in north, central and western Iowa. The cooperative offers grain, feed, energy and agronomy services.

### Nutrien Ag Solutions

Wall Lake | [nutrienagsolutions.com](http://nutrienagsolutions.com)



Nutrien Ag Solutions has been a part of ACWA since the organization's inception. It was known as United Agri Products until 2017, but the company has been serving farmers across the Midwest since the 1960s. The full-service supply company offers a Sustainable Ag platform, tailoring solutions for the best fit in individual fields. Nutrien Ag Solutions is also involved with the Farm to River Partnership, an Iowa Water Quality Initiative led by ACWA.

### Pro Cooperative

Pocahontas | [procooperative.com](http://procooperative.com)



A founding member of ACWA, Pro Cooperative has been a steadfast resource for farmers in north-central and northwestern Iowa since 1911. The company serves producers in 12 counties nestled in between and above the Des Moines and Boone River watersheds, which are focus areas in the Iowa Nutrient Reduction Strategy. Although the coop's customers generally aren't located in these targeted watersheds, farm and land management in Pro Cooperative's geographic areas affects their neighbors downstream.

### Van Diest Supply

Webster City | [vdsc.com](http://vdsc.com)



Van Diest Supply Company was founded in 1956 by Bob Van Diest, serving farmers in central Iowa with fertilizer and other chemical needs. Today, the company includes facilities on 270 acres in Webster City, and 19 distribution centers across the Midwest. The company formulates and distributes chemical products for agriculture, and products for management of turf, trees, mosquitoes, and invasive brush and aquatic plants. Van Diest Supply is a founding member of ACWA. With the company's roots in Hamilton County, Van Diest's local customers directly affect the Boone River and its tributaries.

## LOOKING AHEAD

### NEW ACWA MEMBERS

#### Central Valley Ag

York, Nebraska | [cvacoop.com](http://cvacoop.com)

Central Valley Ag (CVA) was formed in 2003 by three Nebraska cooperatives and has continued to grow and serve farmers in Nebraska, Kansas and Iowa.

A leader in the region for agricultural products including agronomy, energy and feed as well as grain handling and marketing, CVA also offers services for cropping systems solutions that include programs for nutrient and soil management, carbon credits, grain premiums for sustainability practices and organic farming. Their on-staff conservation agronomists help CVA farmer customers make the best decisions for their operations while considering the environmental and profitability factors.

CVA joined ACWA in 2023 to help be a part of the water quality improvement solution. CVA leaders believe becoming a member of ACWA helps them to continue to fulfill their co-op's vision, which is to ensure sustainable agriculture for future generations.

## ASSOCIATE MEMBERS

### Corteva Agriscience

Indianapolis, Indiana | [corteva.com](http://corteva.com)

### Iowa Agriculture Water Alliance

Ankeny, Iowa | [iowaagwateralliance.com](http://iowaagwateralliance.com)

### Iowa Corn Growers Association

Johnston, Iowa | [iowacorn.org](http://iowacorn.org)

### Iowa Soybean Association

Ankeny, Iowa | [iasoybeans.com](http://iasoybeans.com)

### Koch Fertilizer, LLC

Wichita, Kansas | [Kochind.com](http://Kochind.com)

### Nationwide

Des Moines, Iowa | [nationwide.com](http://nationwide.com)

### Truterra, LLC

sustainability business of Land O'Lakes  
Arden Hills, Minnesota | [truterraag.com](http://truterraag.com)

### Verdesian Life Sciences

Cary, North Carolina | [vlsci.com](http://vlsci.com)

### The Mosaic Company

[mosaicco.com](http://mosaicco.com)

The Mosaic Company is ACWA's newest associate member, joining in 2023. The international company is a wholesale marketing and manufacturer of phosphorus and potassium fertilizer products, serving all of Iowa.

Mosaic is a leader in 4R Nutrient Stewardship, of which ACWA also supports.

Joining ACWA helps The Mosaic Company to support their ag retail customers and to collaborate on Iowa water quality improvements. Company leaders believe ACWA is a unique organization where ag retail members are driving the water quality effort, which fits well with Mosaic's company strategy.

Since 2004, The Mosaic Company has been partnering with other conservation organizations across the country that are implementing on-the-ground assistance to farmers and ag retailers. Currently, Mosaic is involved with 12 organizations and 15 projects across North America.

Pillar:  
Leader &  
Advocate

# CONSERVATION AGRONOMIST NETWORK

Implementing agricultural conservation practices on the landscape can sometimes seem daunting. It requires know-how for matching the right producer with the best conservation practice in the proper location. The conservation agronomist is available to help with these decisions and much more.

Originally created by ACWA as a project coordinator for the Elk Run watershed project, the responsibilities of this position grew from a promotor of conservation to an expert on conservation ag practices. The idea of an on-hand agronomist who focuses on soil and water quality was appealing to ACWA members and more of these positions were created. The conservation agronomist allows ag retail agronomists to continue their support for the producer on planting decisions, weed and pest management and more.

The Conservation Agronomist Network was established in 2021 and is overseen by Iowa Soybean Association. Currently there are eight conservation agronomists in Iowa who work directly for an ag retailer or are supported by ACWA or ISA grant funding. See ACWA's footprint map on the back cover that indicates locations of conservation agronomists.

"Conservation Agronomy is a natural and vital extension to meet farmer customer goals for productivity and profitability," says Roger Wolf, ACWA executive director. "As farmers implement new conservation practices, they often have agronomic questions and need insights on how to access support and solutions. The Conservation Agronomy model is helping farmer customers capture value and drive more conservation practice adoption.



ACWA is helping to innovate and prove how this can be implemented across the ag retail space."

In 2022, the firm Bâton Global was secured to conduct an evaluation of the Conservation Agronomist Network to gain insight of this position's value and environmental impact. As ACWA, ISA and ag retailers explore this position, it made sense to ensure a positive path with this evaluation.

**"The Conservation Agronomy model is helping farmer customers capture value and drive more conservation practice adoption. ACWA is helping to innovate and prove how this can be implemented across the ag retail space."**

— Roger Wolf, ACWA Executive Director

Through interviews with the conservation agronomists and ag retail staff, Bâton Global reported a positive outlook for future growth. The main themes from their conversations were collaboration and knowledge-sharing. Staff agronomists and conservation agronomists collaborate and learn from one another to help producers with their management and practice choices.

Based on the information the conservation agronomists and ag retailers provided, Bâton Global factored the benefits of the conservation practices in-place over three years. They estimated that more than 1.4 million pounds of nitrogen and 32,000 pounds of phosphorus have been reduced from entering Iowa waterbodies through cover crops and implemented edge-of-field practices such as bioreactors.

There are many more conservation practices already on Iowa's landscape that weren't implemented through a conservation agronomist, so statistics could be assumed to be much greater.

The conservation agronomists are experiencing a positive response of their presence from farmers, landowners and ag retailers. They are looked to for their knowledge of conservation practices and the steps needed for installation and cost-share funding, making these experts a valued asset to Iowa agriculture.

## Conservation Agronomist Activity 2020-2022\*

One-on-One Conversations	<b>2,053</b> people
Conservation Practice Recommendations	<b>2,478</b>
Cover Crops	<b>93,958</b> acres
Improved Nutrient Management	<b>9,973</b> acres
No-Till/Strip-Till Adoption	<b>9,310</b> acres
Edge-of-Field Practices	<b>128</b> sites

## Environmental Benefits 2020-2022 Total\*

Acres	<b>93,958</b>
Pounds of Nitrogen Removed	<b>1,410,497</b>
Pounds of Phosphorus Removed	<b>32,152</b>
Tons of Carbon Removed	<b>37,583</b>

\*source Bâton Global

**"Before there was no one in this territory and no one knew what conservation agronomy was... being here as a technical resource has been important to share information."**

— Conservation Agronomist comment from Bâton Global survey

## LOOKING AHEAD

### New Partnership Expands Conservation Agronomist Network

A new partnership between ACWA and the Iowa Department of Agriculture and Land Stewardship (IDALS) was announced in March 2023 to expand the network of conservation agronomists.

"Conservation agronomists serve as trusted advisers to Iowa farmers and landowners and help to identify, plan, and implement proven water quality and soil conservation practices," said Iowa Secretary of Agriculture Mike Naig. "As we scale up and accelerate our statewide water quality efforts, innovative public-private partnerships like this will get more practices in place and move us closer toward achieving our Nutrient Reduction Strategy goals."

IDALS will utilize \$1.9 million in public funding from the EPA's new Gulf Hypoxia Program to extend the duration of three conservation agronomists and deploy two additional positions. Other funding support will continue from ACWA.

The conservation agronomist network will:

- Strengthen collaboration and project development between conservation agronomists, ag retailers, watershed coordinators and other conservation professionals to increase the adoption of practices.
- Connect farmers and landowners with technical and financial assistance to install priority in-field and edge-of-field practices.
- Continue to grow ag retail engagement in conservation and nutrient reduction practices to supplement agronomic and production expertise.
- Emphasize outreach efforts and highlight opportunities for individuals within priority watersheds to participate, especially with more dedicated water quality funding being made available.
- Support the implementation of practices that will lead to an estimated reduction of two million pounds of nitrogen and 57,000 pounds of phosphorus.

# NORTH RACCOON FARM TO RIVER PARTNERSHIP

The North Raccoon Farm to River Partnership is wrapping up the second year of a three-year Water Quality Initiative (WQI) project through the Iowa Department of Agriculture and Land Stewardship. ACWA oversees the partnership, which includes Sac, Calhoun, Carroll and Greene counties in the North Raccoon River watershed.

As part of the project, farmers and landowners can adopt agriculture conservation practices through cost-share funding up to 100 percent. Cover crops on new acres, bioreactors, saturated buffers, targeted wetlands and oxbow restoration can all be added to the landscape with financial help.

Joe Wuebker is the project coordinator and helps with location possibilities, paperwork and installation scheduling. He partners with ACWA members Nutrien Ag Solutions, Landus Cooperative and NEW Cooperative, and their sales agronomists to connect customers with conservation.

“The Farm to River Partnership is a great way to add these conservation practices with little to no cost for the farmer or landowner,” Wuebker says. “The benefits of these practices all help to improve water quality in the rivers and tributaries in the watershed and downstream.”

Over the past year, Wuebker has been out on the circuit promoting the WQI, informing audiences of how these practices work and the steps needed to install them. He’s given presentations at the Agribusiness Association of Iowa and participated in their Showcase and Conference in February. Other outreach includes radio and newspaper ads and interviews, social media, postcards

and flyers placed in coffee shops and other sites where farmers gather.

Wuebker also continues to develop a self-guided tour of conservation practices, now in its third year.

“I partnered with Ethan Thies, the Black Hawk Lake watershed coordinator, and we created a tour that folks could follow on their own to see cover crops,” Wuebker says. “The first year, we had 13 sites of various cover crops including single species and mixes. Last year, we had 25 sites, and in 2023 we will have 16 sites. We are including other conservation practices as well.”

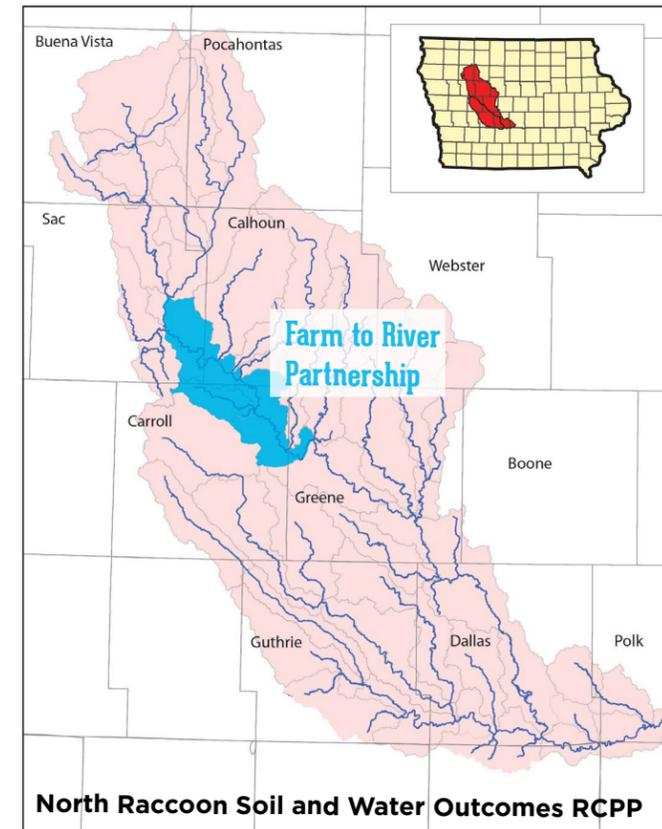
Installations of edge-of-field practices, such as a bioreactor, are increasing, but slowly, Wuebker says. Once installed, they aren’t visible, so producers may not know what they look like when finished. He’s added a bioreactor to the tour to help folks learn more about them. He hopes that the more informed farmers are about these practices, the more likely they will adopt them. He is available to help determine potential locations for a bioreactor or other conservation practice.

A new conservation practice has been added in the watershed that Wuebker is excited about. Mark Schleisman, who is already a leader in adopting agricultural conservation practices, installed a recycling drainage system on his farm.

Schliesman’s configuration includes an irrigation system to a field with an installed neighboring water retention pond. The pond holds water from several tile-drained fields from which water can be pumped back into the



Farm to River Partnership



field when rainfall is limited. While the water is in the pond, the natural denitrification process is taking place, and the nutrients remaining in the retention pond water can go back to the field through irrigation for the crop to use. The system is rare in Iowa, but research is showing crops could benefit from more water in the drier summer months.

The Farm to River Partnership receives additional support from the Iowa Soybean Association and a federal Regional Conservation Partnership (RCPP) project.



Water control structure with an installed bioreactor



Bioreactor installation

## LOOKING AHEAD

### Cover Crops In Action

In 2021, Farm to River Partnership project coordinator Joe Wuebker brainstormed with Black Hawk Lake watershed coordinator Ethan Thies to create a self-guided tour of area fields with cover crops. They created a Google map of the fields, which also contains a description of what was planted and when.

The tour was a success and Wuebker shared their idea with other conservation agronomists. Since then, additional site tours were created by Wuebker, Ryan



Johnson in northwest Iowa, and Evan Brehm in eastern Iowa, with more being developed this coming season.

As conservation practices are installed, the maps can be easily changed to include sites with bioreactors, wetlands and more.

Interested folks can download the map via a QR code and drive to the locations of interest to view the cover crops in action. They can revisit anytime to see how the fields look at different times

of the season, but between April and June are the recommended times for viewing.

The tours are in partnership with several groups, including Iowa Soybean Association and some Soil and Water Conservation Districts.

Visit the Iowa Soybean Association website for more information and QR codes for current tours:

[iasoybeans.com/research/cover-crops-in-action/](https://iasoybeans.com/research/cover-crops-in-action/)

# WATER MONITORING

One of the goals that ACWA set shortly after the organization was established was monitoring nutrient levels in the Raccoon river, which serves as drinking water source for the Des Moines metro area. What started as recording levels of nitrate-nitrogen in the watershed has expanded over the last two decades to include key watersheds across the state (Figure 1). Included in the sampling now are rivers and tributaries as well as tile drainage sampling from individual farms.

Anthony Seeman oversees the water monitoring and sampling for ACWA. He is also in charge of Iowa Soybean Association's certified water lab, where all the samples are processed. His expertise in analysis of the annual data is insightful and summarized in this report, which includes an overview of stream and tile water sampling conducted between April and August 2022.

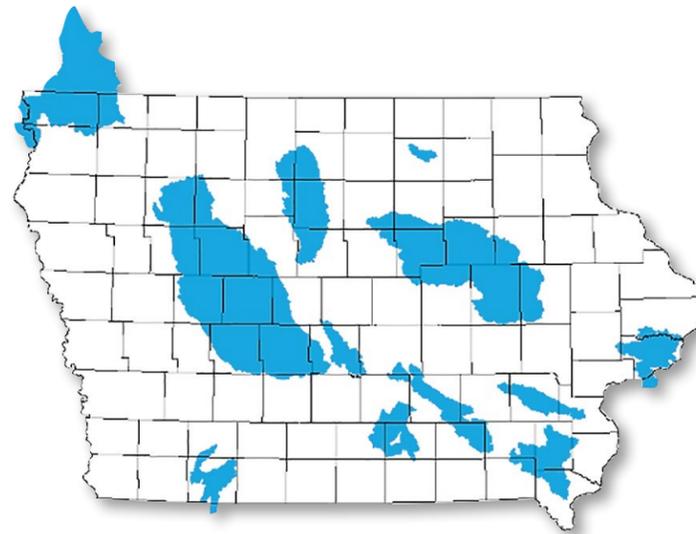


Figure 1. Iowa water sampling areas in 2022.

## ACWA STREAM SAMPLING

"The main takeaway from stream water sampling in 2022 is a high amount of variability," says Seeman. "A strong northwest-to-southeast increasing gradient of rainfall led to stark differences in nitrate export in both the Raccoon and Des Moines River Basins."

After a dry finish to 2021, there were concerns that levels of nitrate remaining in the soil were high and a large flush could come in 2022. As the year unfolded, those concerns were somewhat realized in watersheds that had adequate precipitation and streamflow, but large areas of northwest Iowa remained dry, limiting the amount of nitrate flushed into the Raccoon River. While this was good for the quality of water coming into Des Moines Water Works, it also means that nitrate levels may be even higher in those areas in spring of 2023.

In the Boone River, soil moisture conditions were more mixed; nitrate concentration and loads were closer to the 2007-2021 averages.

"These areas are a sharp contrast to Beaver Creek, just north of Des Moines, where precipitation over the monitoring period was roughly average and the nitrate-N load was 35 percent above average," he notes. "The total load in Beaver Creek could have been even higher considering streamflow during July and August was low from the drought area expanding into it."

It remains to be seen if last year flushed the majority of available nitrogen into Beaver Creek, but based on results from last year there is still a chance of significant export from the North Raccoon River again in 2023.

	April-August 2007-2021 Average			April-August 2022		
	Nitrate-N Concentration (mg/L)	Discharge (cfs)	Nitrate-N Yield (lbs per acre)	Nitrate-N Concentration (mg/L)	Discharge (cfs)	Nitrate-N Yield (lbs per acre)
Upper N Raccoon	9.1	1,817	16.8	6.1	530	4.1
Boone River	9.7	1,143	20.6	10.1	650	13.5
Beaver Creek	8.3	480	16.8	11.2	443	22.6

Figure 2. Comparison of nitrate-N discharge in the Upper North Raccoon River, Boone River and Beaver Creek between 2022 and previous years average.

	Beaver Creek	Des Moines River	Upper Boone River	Boone River	Upper North Raccoon River	North Raccoon River	Middle Raccoon River	South Raccoon River
Acres	236,475	3,739,942	266,985	541,309	1,030,905	1,462,636	384,544	240,291
2022	22.6	5.7	13.0	13.5	4.1	7.5	5.9	8.2
2007-2021 Average	16.8	12.2	22.0	20.6	16.8	17.1	10.2	14.4

Figure 3. Average export of nitrogen in pounds per acre in 2022; estimated load divided by total acres.

## ACWA TILE SAMPLING

The tile water sampling from 2022 is similar to stream sampling results and reinforces that data. In important project areas such as the North Raccoon River headwaters and Farm To River Partnership, Seeman says that flowing tiles were hard to come by later in the season.

"Early in the sampling season, the usual amount of samples were collected and monthly average concentrations were the highest since 2015 and 2016, confirming that residual soil nitrate was high following the warm, dry fall of 2021," says Seeman.

Again in 2022, the crop year ended with very dry conditions, this time causing yield decline in some areas, unlike 2021. This suggests that nitrate in the soil was not able to get into the crops or leached downward and may still be vulnerable in the spring.

One way to mitigate excess nitrogen in the soil is to plant a cover crop after harvest. While many producers use cover crops in a rotation only ahead of soybeans, there are some who implement the practice every year regardless of the following crop.

A comparison of two sites in Carroll County shows the impact that continual cover crops can have on tile water quality both on the long term results, and more dramatically in a scenario like last year where the conventional field had a large spike in the peak nitrate-N concentration while the cover crop field had a more gentle and lower increase, reinforcing that cover crops act to trap excess nitrogen and keep it from leaching down to tile lines. (Figure 4).

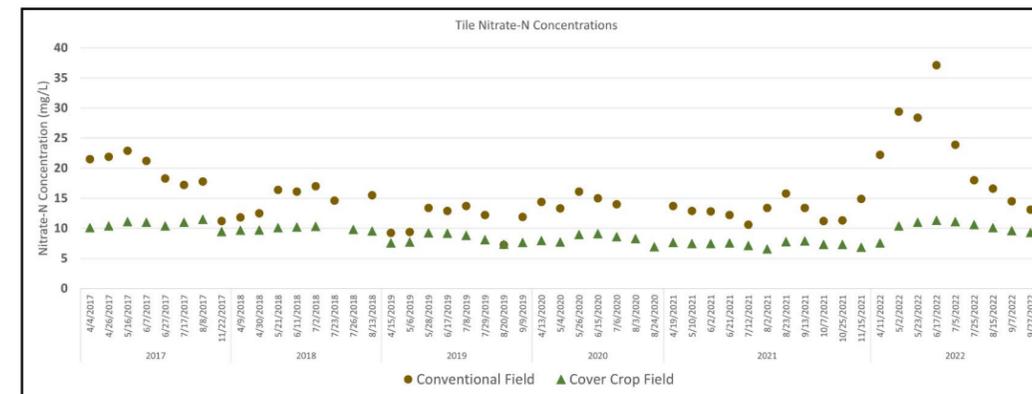


Figure 4. Comparison of Nitrate-N concentrations from tile drains in Carroll County in a conventional field and one with cover crops.

## NEW INFORMATION ADDED TO ACWA ANNUAL RESULTS SUMMARY

ACWA water monitoring started in 2000 with a simple focus: to gather data to understand the impacts of agriculture on the Raccoon River with regard to its use as a drinking water source for Des Moines Water Works. Every growing season since then, with the assistance of Iowa Soybean Association and a group of certified volunteers, ACWA has overseen the collection and analysis of water samples for nitrate-N concentrations from stream locations throughout the watershed.

In recent years, the data has proved valuable for a variety of uses and partners interested in improving water quality including the Iowa Nutrient Reduction Strategy. While the strategy will have a positive impact on water quality for drinking, the INRS goals include the reduction of the total export of nitrogen, not only the concentration amounts.

Recently, the U.S. Geologic Survey released an improved tool for estimating discharge in streams throughout Iowa. Using a nearby stream gage for reference, it creates an estimated daily flow based on the physical

factors of the watershed. While the flow estimate for any given day may not be highly accurate, the estimate of water leaving the watershed over longer time scales is reasonable, based on the similarity in water yield with the reference gages. Pairing these monthly estimates of flow with the concentration data gives an estimate of the total amount of nitrogen leaving the watershed.

[www.acwaiowa.com/water-monitoring/](http://www.acwaiowa.com/water-monitoring/)

For 2022, an additional map and table are included in the data summaries posted to the ACWA website, containing estimates of watershed precipitation, discharge, and nitrogen export. Previous summaries will be updated to include this information as well, so visitors will be able to see a more complete picture of water quality in areas that ACWA conducts stream water monitoring. Visit the ACWA website water monitoring pages for more information.

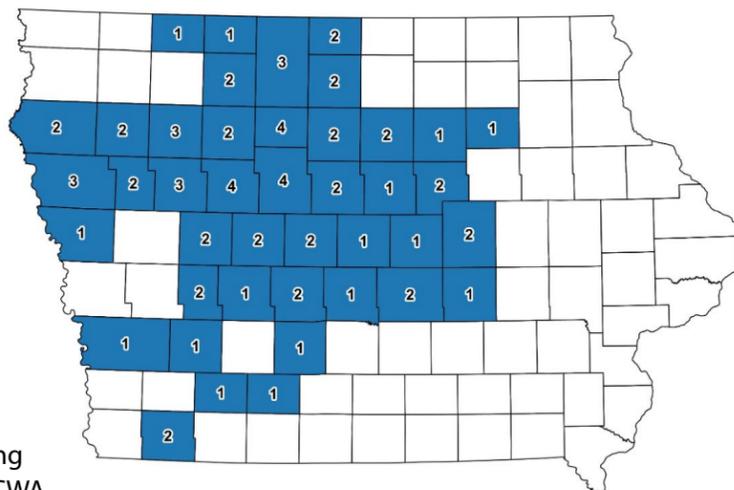
## CODE OF PRACTICE

ACWA members reaffirmed their annual commitment to protect Iowa's soil and water at their September 2022 board meeting. The members agreed to the Environmental Code of Practice for Nitrogen Fertilization, which states they will delay fall anhydrous applications without a nitrification inhibitor until soil temperatures are 50 degrees Fahrenheit and trending lower. This reduces nitrate loading from farm fields into Iowa's rivers and streams, helping to protect the state's water resources.

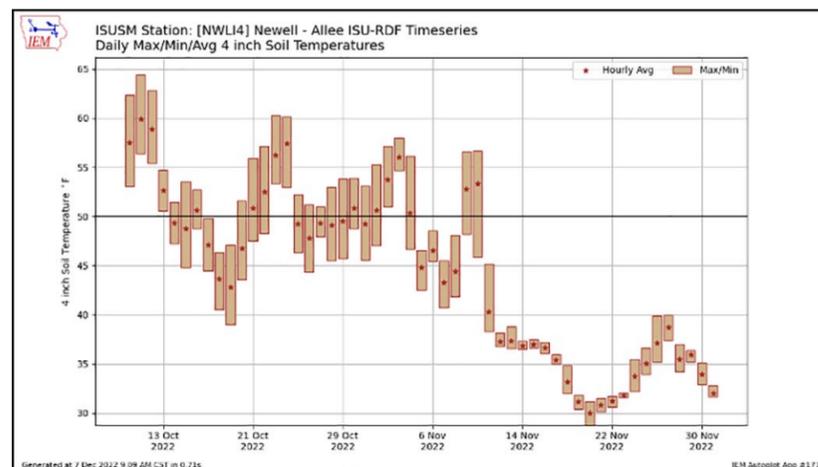
Since ACWA's founding in 1999, members have agreed to the Code of Practice, a requirement of membership since 2001. Because of members' locations, ACWA's footprint covers more than 70 percent of the state, enabling the Code of Practice to have a greater impact on water quality than ever before.

Members self-report to ACWA to validate their conformance to the Code of Practice, which takes place usually in mid to late October, depending on the region. Colder soils hinder the conversion of ammonium nitrogen to nitrate, which reduces leaching or denitrification and keeps ammonium in the soil. ACWA recommends using the county soil temperature and forecast maps published by Iowa State University as a decision tool for beginning fall fertilizer applications.

In addition, ACWA members encourage the use of nitrogen stabilizers, slow-release fertilizers, incorporation or injection, soil nitrate testing and other tools that minimize loss of nitrogen to water sources. Farmers and landowners can implement conservation practices such as no-till, cover crops, bioreactors and saturated buffers, which keeps nutrients and soil in farm fields and reduces loading into waterbodies.



The Iowa map indicates the counties and number of soil temperature observations recorded in 2022.



Soil temperature graphs, like this one for 2022 at Newell-Allee, provide a picture of how these temperatures can fluctuate in the fall. This example illustrates why ACWA's Code of Practice states that soil temperatures should be 50 degrees and trending lower for the maximum benefit of keeping nitrogen in the soil.

## 2022 FINANCES

FY2022: March 1, 2022 –February 28, 2023

### Revenue:

Members.....	\$250,000
Associate Members .....	156,250
Farm to River Partnership.....	138,000
Interest .....	510
<b>Total .....</b>	<b>\$544,760</b>
Additional In-kind Grants & Contracts	
<b>Total .....</b>	<b>\$780,000*</b>

### Expenses:

Projects and Programs.....	\$338,000
Management/Admin/Members.....	187,250
Operations .....	22,000
<b>Total Expenses .....</b>	<b>\$547,250</b>

\*Supplemental in-kind funding aligned with ACWA mission and initiatives

## THANK YOU!

As this report reviews the accomplishments of ACWA over the last year, we owe a big thank you to all members, associate members, and growers who contributed to these efforts.

With you, Iowa's water quality and soil health keeps improving.

With you, more people are aware of ACWA and are stepping up to partner with us to achieve these common goals.

If you are an ag retailer or a business supporting ag retail and would like more information on ACWA membership, contact us! We love to talk about sustainability.

Please continue to have the conversations and doing the hard work it takes to make a more sustainable Iowa, Midwest and beyond, for us and future generations.

### 2022 ACWA Code of Practice Member Participation

**100%** Reported implementing Code of Practice requirements

**95%** Members reported using a nitrogen stabilizer

**78** Total observations for soil temperature

**42** Counties with soil temperature observation



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# Agriculture's Clean Water Alliance Footprint\*

