Minnesota Agricultural Water Quality Certification Program Legislative Report

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Executive Summary

The Minnesota Agricultural Water Quality Certification Program (MAWQCP) is a voluntary program that supports the adoption of agricultural best management practices that are protective of water quality. The program was signed into statute in 2013, piloted in 2014, and began statewide operations in July 2015.

The program has:

- Developed an innovative and comprehensive process for identifying and mitigating agricultural risks to water quality on a field-by-field, crop-by-crop basis;
- Partnered with Minnesota's soil and water conservation districts to create a statewide system, ensuring the program is delivered by local conservation professionals;
- Pursued partnerships with industry leaders, such as Land O' Lakes Inc., to jointly promote the MAWQCP, leveraging the program's budget and allowing it to certify more farmers than it otherwise could; and,
- Established endorsements in five areas of conservation that recognize certified producers' commitment to resource preservation and establish their eligibility for additional program benefits, such as Climate Smart grants.

As of the end of November 2022, the program had certified 1,282 farms representing 934,319 acres. These 1,282 farms have implemented 2,565 new conservation practices[1] that are reducing 49,180 C02-equivalent tons of greenhouse gas emissions per year, keeping 254.7 million pounds of soil on Minnesota fields annually, and preventing 86.6 million pounds of sediment and 54,624 pounds of phosphorous from entering our lakes, rivers, and streams annually. Analysis documented by the Minnesota Pollution Control Agency further estimates as much as a 49% reduction in nitrogen loss on MAWQCP certified farms.

The MAWQCP has also recorded significantly better economic outcomes for certified farms. Starting in 2019, researchers at Minnesota State Agricultural Centers of Excellence and AgCentric have conducted annual financial analyses of Farm Business Management Program participating farms. Over this three-year period, average net farm income for MAWQCP certified farms was 36% higher than non-MAWQCP certified farms.

In 2023, the MAWQCP looks to continue building on its legacy of robust growth and enroll more producers and landowners into the program to continue its work of protecting and improving Minnesota's most iconic natural resource.

[1] A new conservation practice is counted if it fully mitigates a particular risk to water quality. For example, if a series of three water and sediment control basins are required to mitigate a water quality risk, then the installation of the three basins would be counted as one practice.

Introduction

The Minnesota Agricultural Water Quality Certification Program (MAWQCP) is a first of its kind, voluntary program that supports the implementation of conservation practices on a field-by-field, whole farm basis. Through its innovative and nationally recognized process of identifying and mitigating agricultural risks to water quality, the MAWQCP delivers on-farm conservation that helps protect and restore Minnesota's lakes, rivers, streams, and groundwater. The MAWQCP is a national demonstration project that is operated as a federal-state partnership between the State of Minnesota, the United States Department of Agriculture, and Minnesota's 88 soil and water conservation districts (SWCDs). The certification program has also partnered with industry leaders including Land O' Lakes Inc., Hormel Foods, and Central Farm Service to promote the program and enroll additional acreage. Farmers and landowners who treat all risks to water quality on their operation are certified and are deemed to be in compliance with any new water quality laws or rules for 10 years. Certification gives farmers and the public greater certainty about regulatory standards and assures the public that Minnesota's farmers are doing their part to protect water quality.

This report is submitted pursuant to Minnesota Statute §17.992:

> *The commissioner, in consultation with the Minnesota Agricultural Water Quality Certification Program Advisory Committee, commissioner of natural resources, commissioner of the Pollution Control Agency, and Board of Water and Soil Resources, shall issue a biennial report to the chairs and ranking minority members of the legislative committees with jurisdiction over agricultural policy on the status of the program*.

Program Background

The MAWQCP was initially formed through a 2012 memorandum of understanding (MOU). The MOU was the culmination of talks led by Governor Mark Dayton, United States Department of Agriculture (USDA) Secretary Tom Vilsack, and U.S. Environmental Protection Agency (EPA) Administrator Lisa Jackson. The MOU stated that Minnesota's state agencies responsible for overseeing issues at the nexus of agriculture and water quality, including the Minnesota Department of Agriculture (MDA), Pollution Control Agency (PCA), Department of Natural Resources (DNR), and Board of Water and Soil Resources (BWSR), would jointly deliver the program with the MDA acting as the lead agency.

Under the MOU, the MDA was tasked with convening an advisory committee of diverse agricultural stakeholders to design an agricultural water quality certification program. The advisory committee was comprised of 15 members who represented a wide variety of interests. Members included representatives from the Minnesota Farm Bureau Federation,
Minnesota Farmers Union, county and municipal government, agribusiness, the environmental community, and diverse farm operations. Chief among the advisory committee's recommendations was piloting the program prior to statewide implementation and the creation of a new, innovative assessment process that would help field staff identify risks to water quality for each crop being grown. These insights informed the MAWQCP's originating statute (Minn. Stat. § 17.9891-17.993), which was signed into law in the spring of 2013. Under the statute, once producers and landowners have mitigated all risks to water quality present on their operation, they are eligible to become certified and sign a contract with the State of Minnesota. The certification contract states certified producers and

landowners will be deemed in compliance with any new state agricultural water quality laws or rules for 10 years.

In June 2013, the MAWQCP began designing its pilot phase and sought applicants to select four sub-watersheds, representing the state's distinct agricultural and geographic regions. The pilot areas were successful where they were coordinated through local SWCDs; however, other pilot areas failed to gain robust participation in the regions where the pilot was led by a nonprofit. Minnesota's SWCDs are historic providers of conservation services and are seen by Minnesota's farmers and landowners as trusted partners. So, when the program began implementing statewide operations in July 2015, it partnered with the SWCDs to deliver certification services.

In addition to the advisory committee, the MDA also created an interagency team to guide the program's development and implementation. This team was comprised of individuals from the PCA, BWSR, and DNR. Each of these agencies brought their unique expertise to the table, ensuring the MAWQCP was designed and implemented in a manner that respects each agency's unique role in the state's agricultural arena. The Minnesota interagency team and advisory committee are still active and continue to provide the MDA with key insights on the operation and direction of the certification program (Figure 1).

Member	Organization
Anne Schwagerl	Minnesota Farmers Union MAWQCP Certified Producer
Ariel Kagan	Environmental Initiative
Brian Buhr	Dean – U of M, College of Food, Agriculture and Natural Resource Sciences
Bryan Biegler	Minnesota Corn Growers Association MAWQCP Certified Producer
Dennis Fuchs	Stearns County SWCD
Eric Sannerud	MAWQCP Certified Producer
Joe Smentek	Minnesota Soybean Growers Association
Leif Fixen	The Nature Conservancy
Lori Cox	Roots Return Heritage Farm MAWQCP Certified Producer
Lucas Sjostrom	Minnesota Milk Producers Association MAWQCP Certified Producer
Nathan Collins	Minnesota Farm Bureau MAWQCP Certified Producer
Spencer Herbert	Land O' Lakes - Truterra
Steve Peterson	retired - General Mills past-Chair - Field to Market past-Chair - Minnesota AgriGrowth Council MAWQCP Certified Producer
Tom Raymond	Hormel Foods
Trent Wimmer	Syngenta

Figure 1: MAWQCP Advisory Committee Members for FY 2023-2024

The USDA Natural Resources Conservation Service (NRCS) has also been instrumental in developing the certification program. From the outset, the MAWQCP has partnered with NRCS to fund the installation of on-farm conservation practices, and in 2015, the MAWQCP received a competitive five-year Regional Conservation Partnership Program (RCPP) award of $9 million. Through this award, the NRCS

has worked seamlessly with MAWQCP staff to create processes and protocols to distribute financial assistance to farmers seeking certification and to jointly promote the program. In November 2019, the MAWQCP received a second five-year RCPP renewal of $9 million to continue providing technical and financial assistance to farmers seeking certification. It was a competitive award process and the MAWQCP was one of just 18 renewals nationwide and the only project in Minnesota to receive an RCPP award in 2019.

Assessment Process

The MAWQCP's nationally recognized method for identifying and mitigating agricultural risks to water quality has created a commonsense blueprint to recognize, reward, and incentivize farmers in their efforts to protect and improve Minnesota's waters. The MAWQCP's assessment process utilizes comprehensive tools and traditional conservation delivery methods to deliver certification services; however, the program's core service is putting landowners and producers in touch with conservation professionals to create individualized water-focused conservation plans that protect the environment.

The program's assessment process includes utilizing an online risk assessment tool. The tool was developed by MAWQCP staff as a first-of-its-kind method for identifying risks to water quality in every field and on any cropping system. Specifically, the tool analyzes nutrient management, tillage management, pest management, irrigation and water drainage management, and conservation practices. Data collected by the tool informs subsequent on-site inspections, ensuring no risks are missed and all are properly mitigated. All farm-level data collected during the assessment process is private and, per the MAWQCP's originating statute, subject to the highest level of data privacy afforded by the State of Minnesota.

The certification process is straightforward and easy for interested producers to navigate.

- **Contact** – A producer seeking certification contacts their local SWCD or participating private retailer and sets up an initial meeting.
- **Assess** – Local certification specialists meet with the producer to learn more about their operation and then begin identifying risks to water quality using the MAWQCP's risk assessment process.
- **Meet** – A certification specialist meets with the producer to go over the results of the initial baseline risk assessment. Together the certification specialist and producer create a plan, which often includes financial and technical assistance components, to mitigate any risks to water quality identified in a manner that works for the producer and the environment.
- **Verify** – The certification specialist conducts a field assessment to verify the results of the risk assessment and ensure that the plan the producer and certification specialist have created mitigates the risks to water quality.
- **Support** – The producer and the certification specialist stay in touch to ensure the producer can maintain their certification as they make changes to their operation.

The certification process is producer driven, occurring when a producer has time, and takes less than 10 hours on average for the producer. Importantly, there is no timeline for completing the process.

Production agriculture is a complex and costly endeavor and the MAWQCP allows producers to mitigate risks to water quality at a pace, and in a manner, that makes sense for their operation. Most producers sign their certification contract within a few months, but some have taken more than a year to complete the process.

Program Operations

The success of the program's pilot phase led the Legislature to recommend the program begin statewide implementation in 2015, one year ahead of schedule. Through the pilot phase, the MAWQCP realized four crucial lessons:

1. Partnering with Minnesota's SWCDs is key to the MAWQCP's long-term success;
2. Each certification is different and needs to be tailored to the producer's goals and timeline;
3. Crop advisors and retailers are often important sources of information for producers who can also help with the certification process; and,
4. Motivations for pursuing certification vary from producer to producer and should be accounted for when developing outreach and engagement strategies.

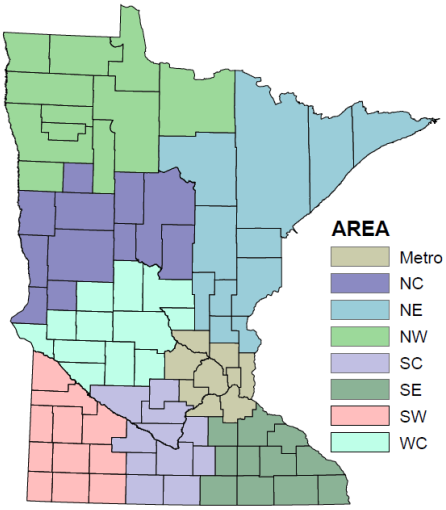

Figure 2: MAWQCP Regions

When the MAWQCP began statewide operations in July 2015, its first order of business was creating a regional structure that allowed local SWCDs to take the lead in delivering certification services (Figure 2). Working in collaboration with BWSR and the Minnesota Association of Soil and Water Conservation Districts (MASWCD), the MAWQCP created eight service regions. Each region consists of 9-12 counties. Each region has a fiscal agent (either an SWCD manager or joint powers board manager) responsible for disbursing funds to local SWCDs and staffing an Area Certification Specialist (ACS). The ACS is responsible for working with interested landowners and producers and serving as the regional organizer for the MAWQCP. Each ACS is employed by an SWCD with pass-through funds from the MAWQCP's annual budget (66% of the MAWQCP's overall budget is pass-through to support local partners and growers). In addition to employing an ACS for each region, the MAWQCP is committed to working with every one of Minnesota's 88 SWCDs, and every SWCD that participates in promoting or delivering the program may submit invoices for staff time and materials related to program delivery.

The MAWQCP's ACSs are the backbone of the program. The ACSs are directly responsible for conducting the MAWQCP's risk assessment and then working with each producer to find a pathway to certification that treats every risk to water quality identified in the baseline assessment and makes economic and agronomic sense for the producer. ACSs also help producers seeking certification navigate all possible options for financial assistance, including the MAWQCP's dedicated funding from the USDA NRCS and the MDA's financial assistance grant.

In 2016, the MDA began offering financial assistance grants of up to $5,000 at 75% cost-share to producers seeking certification. These grants are designed to work in concert with and supplement financial assistance available from NRCS and SWCDs/BWSR to provide producers with the resources necessary to adopt best management practices that protect and improve water quality. In FY2022, the MAWQCP Financial Assistance Grant program awarded 127 grants to Minnesota farms for a total of $487,087. The most common new practices implemented with the grant include cover crops, water and sediment control basins, prescribed grazing, fencing, and grassed waterways. To date, the MAWQCP Financial Assistance Grant program has awarded $2,077,509 directly to Minnesota producers.

Aside from their work with interested producers and landowners, the ACSs also coordinate program implementation for the SWCDs in their region. Some SWCDs have taken the lead and are operating the program on their own, while others have opted to take less active roles. To provide further assistance to the ACSs and the SWCDs in delivering certification, as well as to take advantage of the experience of some seasoned conservation and agronomy professionals, the MDA has employed up to six certifying agents as intermittent employees. Having these certifiers, with up to 30 years of experience in the field, has been of great value to the producers seeking sound agronomic and conservation advice. The MDA has also joined our partnering SWCDs to sponsor Conservation Corps of Minnesota and Iowa individual placement apprentices to help launch careers in conservation.

Protecting credibility is an important piece of the certification program. To do this, certified farms participate in at least one individualized certification review/audit during the 10-year certification period. This process gives the program the opportunity to provide further support and assistance, to review and gain insight on improving the certification process, and to discuss any changes to the operation since time of certification. It also verifies all terms and conditions of the certification agreement are met. Certification reviews are conducted after a producer has been certified for four years. These reviews involve phone calls with the producer and may also include site visits, depending on the contingencies identified at the time of certification. Over 500 program reviews have been completed. As of 2021, 93% of producers remain in active certification, with that number climbing to 98% once land sales and deaths are removed. The review data indicates that nearly a quarter of producers have decreased their tillage since they were certified, and that 38% of producers have land in perennial vegetation (not including alfalfa). Additionally, about half of the producers reviewed in 2021 use cover crops.

In late 2019, the MAWQCP launched three new program endorsements for soil health, integrated pest management, and wildlife. Climate smart endorsements were added in 2021, and irrigation water management endorsements were added in 2022. Many conservation practices targeting water quality have benefits for other conservation goals, and the endorsements provide additional recognition to water quality certified producers who are going above and beyond to implement conservation on their farms. The MAWQCP partnered with various non-profit organizations, the University of Minnesota, soil and water conservation districts, and federal and state agencies to develop the criteria for the endorsements. Producers who achieve an endorsement receive an additional sign for their farm and recognition for their conservation excellence. As of the end of November 2022, the MAWQCP has awarded 301 endorsements including 88 for soil health, 68 for integrated pest management, 50 for wildlife habitat, 91 for climate smart practices, and 4 for irrigation water management.

Starting in mid-2022, a $100,000 McKnight Foundation Grant to the MAWQCP allowed a unique expansion of the climate smart endorsement. Producers whose operations are climate smart-endorsed are eligible for $1,000 annual payments. These payments are intended to support producers in their

exploration of additional climate smart benefits that could be added to their operations, as well as their time evaluating participation options in carbon markets or new public programs. Once a producer enrolls in a carbon market, they are no longer eligible to receive the annual payments. The goal of these payments is to encourage and assist producers to both add climate benefits to their operations and to participate in the expanding array of agricultural carbon markets or new public programs.

By partnering with Minnesota's SWCDs and creating a risk identification and assessment process that recognizes producers' existing stewardship while still incentivizing producers to increase their stewardship, the MAWQCP has created a program that is being embraced by Minnesota's agricultural community. As of the end of November 2022, the MAWQCP had certified 1,282 farms (Figure 3), representing 934,319 acres (Figure 4). In addition to tracking enrollment statistics, the MAWQCP also measures the environmental benefits generated by certified farms. The environmental benefits of the new practices implemented to earn MAWQCP-certification are calculated via BWSR's pollution reduction estimator[2] and the Natural Resource Conservation Service's COMET Planner. As of the end of November 2022, the MAWQCP had directly generated 2,565 new conservation practices (Figure 5). To date, these practices are reducing 49,180 C02-equivalent tons per year[3], keeping 254.7 million pounds of soil on Minnesota fields annually, and preventing 86.6 million pounds of sediment and 54,624 pounds of phosphorous from entering Minnesota's waters every year. Further, analysis documented by the Minnesota Pollution Control Agency estimates as much as a 49% reduction in nitrogen loss on MAWQCP-certified farms.

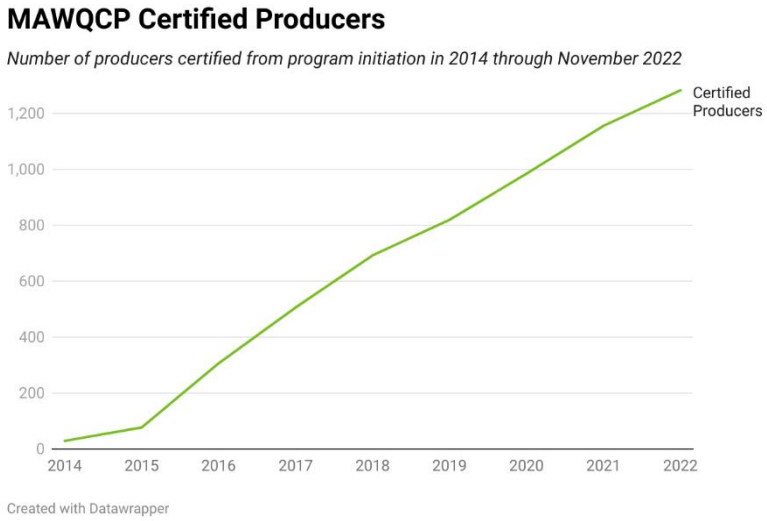

Figure 3: MAWQCP Certified Producers

[2] BWSR's pollution reduction estimator is currently unable to calculate the water quality benefit of every best management and conservation practice utilized by the MAWQCP to mitigate agricultural risks to water quality, thus the environmental benefits reported in this section are likely underreported.

[3] Calculated using NRCS's COMET Planner too.

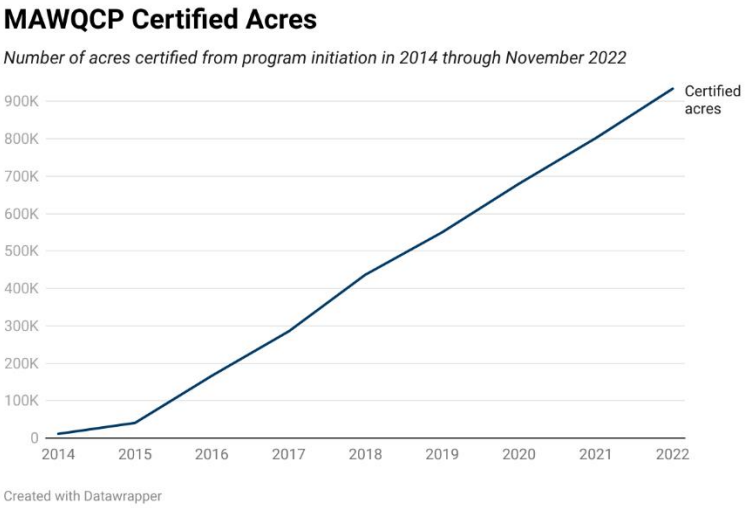

Figure 4: MAWQCP Certified Acres

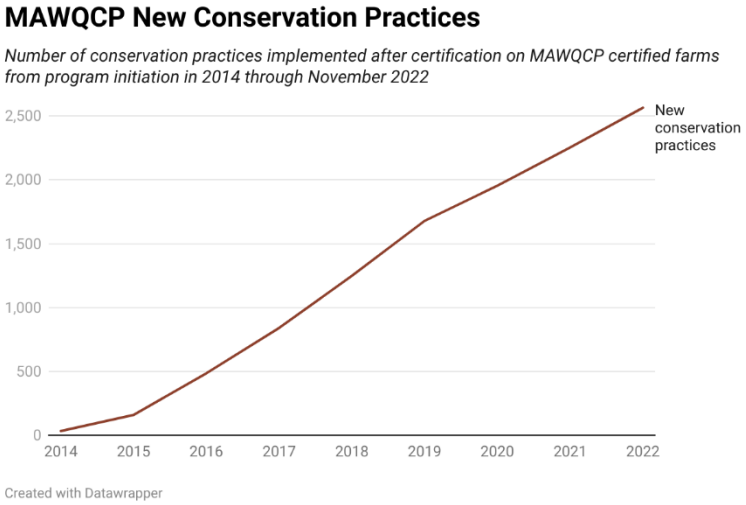

Figure 5: New Conservation Practices Generated by the MAWQCP

In 2021, researchers at Minnesota State Agricultural Centers of Excellence and AgCentric conducted their third financial analysis of Farm Business Management Program participating farms and found MAWQCP certified farms had net income $16,000 higher than non-MAWQCP certified farms for the 2021 report year[4]. The average net farm income of a MAWQCP farm totaled $284,176 versus a benchmark average of $267,379; MAWQCP farmers reported a median net farm income of $190,142 versus a benchmark median net income of $158,294 from non-certified farms. In three consecutive years of financial analyses (2019-2021), MAWQCP certified farms have averaged more than $25,000 higher annual profit than the non-certified farms (Figure 6). Farm Business Management Program participants that are MAWQCP certified also had better debt-to-asset, term-debt coverage, and operating expense ratios. Those certified farms also had higher yields than their counterparts in three out of four crops examined by researchers (corn, soybeans, alfalfa), with the fourth showing an equal average yield (corn silage).

[4] "Influence of Intensified Environmental Practices on Farm Profitability" published by AgCentric and the Minnesota State Agriculture Centers of Excellence (April 2022).

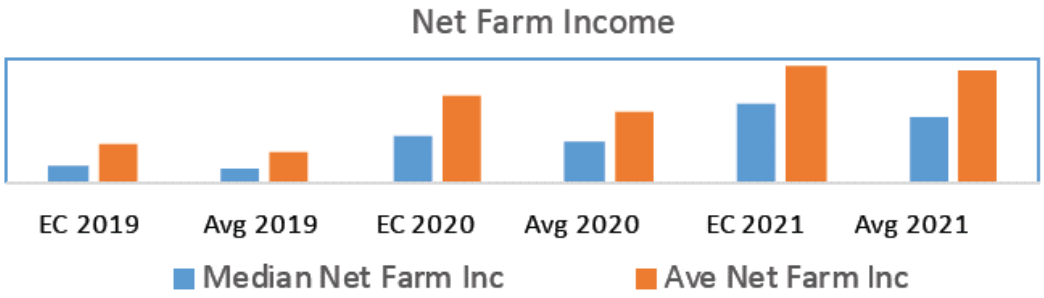

Figure 6: Graph from the "Influence of Intensified Environmental Practices on Farm Profitability" report published by AgCentric and the Minnesota State Agriculture Centers of Excellence (April 2022). MAWQCP farms are coded as Environmental Cohort (EC) and have a higher farm income than the Benchmark Average (Ave).

Partnerships

Delivering the MAWQCP through Minnesota's SWCDs has been the single most important act in setting up a robust, viable, and trusted program. However, a program delivered through SWCDs alone does not have the capacity to help Minnesota meet the statewide water quality goals outlined in *The Minnesota Nutrient Reduction Strategy.* Not every farmer in the state utilizes their local SWCD, and SWCD staff time and funding is limited. MAWQCP program staff quickly realized during the statewide rollout that, to have the ability to certify every interested producer and landowner in Minnesota, the program must be delivered through multiple channels and began aggressively pursuing partnerships with agribusinesses.

In May 2016, the State of Minnesota and Land O' Lakes Inc. signed an MOU establishing a formal partnership between the state and Land O'Lakes to jointly promote the MAWQCP and work together to certify additional producers among the 25,000 Minnesota farms served by Land O' Lakes. Since 2016, Land O'Lakes has assisted farmers with certification in the Minnesota Agricultural Water Quality Certification Program by engaging and educating farmers on benefits, acting as advisors in grant processes, and harnessing existing data collection capabilities. In 2018, Land O'Lakes hired a full-time staff person dedicated to recruiting and engaging Land O'Lakes clientele in the MAWQCP, along with conducting baseline water quality risk assessments. Also, in 2018, the partnership between MAWQCP and Land O'Lakes received nationwide recognition with the first-ever public-private partnership award from the National Association of State Departments of Agriculture (NASDA) (Figure 7).

In 2020, the MAWQCP and Land O'Lakes Inc. developed an application programming interface (API) for the MAWQCP's Risk Assessment Tool with the Land O'Lakes Truterra Sustainability Tool precision agriculture software platform. The interface maintains complete rigor and standards of the MAWQCP assessment process while accessing the generally greater number of data points and detail collected under retailers' highly sophisticated proprietary analytic systems. Clientele of Land O'Lakes' Truterra licensed retailers can now automatically receive a MAWQCP risk assessment score for the certification eligibility of all fields in the Truterra Sustainability Tool. Those leading cooperatives based in or operating in Minnesota include Central Farm Service, NuWay K&H Cooperative, New Vision Coop, Farmward Cooperative, Centra Sota Cooperative, Belgrade Cooperative, Chandler Cooperative,

Northern Country Cooperative, and Cooperative Farmers Elevator. These Truterra-licensed retailers have and will continue to serve millions of acres of Minnesota farm fields and actively connect producers with local certifiers to help them become water quality certified.

Figure 7: Awards poster for the first-ever public-private partnership award presented by NASDA, with a photo of the certification presentation at Dorrich Dairy. From left to right: Greg Vold, Richard Vold, Dorothy Vold, Suzanne Vold, Brad Vold, of Dorrich Dairy; Brad Jordahl Redlin, Grant Pearson, of MAWQCP; Holly Kovarik, Pope SWCD.

In addition, the MAWQCP is a member of Field to Market: The Alliance for Sustainable Agriculture. As a member, the MAWQCP collaborates with a diverse nationwide group of grower organizations; agribusinesses; food, beverage, restaurant, and retail companies; conservation groups; and, universities and public sector partners to focus on defining, measuring, and advancing the sustainability of food, fiber, and fuel production. In 2020, the MAWQCP launched two projects in Field to Market's Continuous Improvement Accelerator program. In partnership with the Nature Conservancy and Stearns County SWCD, the projects implemented and measured the environmental impact of innovative outreach and engagement programs that encourage whole farm planning for water quality in the Sauk River Watershed. The Sauk River projects engaged producers through the MAWQCP, developed strategic cost-share programming, partnered with ag retailers and advisors, and promoted 4R nutrient stewardship. With a goal of achieving an overall water quality outcome while addressing soil health and climate change, the projects also offered an opportunity for producers to see how they scored across different environmental metrics and measure improvements over time. Throughout the course of the project, the farms involved saw decreasing average soil loss, increased biodiversity, and improvements in water quality risk mitigation. Although these projects are wrapped up, the MAWQCP enjoys being part of the national conversation about agricultural supply chain sustainability and will continue to engage with the many opportunities for collaboration and innovation.

At a regional level, the MAWQCP has been at the center of two multi-sector watershed-based initiatives. In 2017, the Cedar River Watershed Partnership was formed as a collaboration between the Land O'Lakes' subsidiary Truterra, CFS, Mower County SWCD, Environmental Initiative, Hormel Foods Corporation, and the MAWQCP. Through this partnership, producers in the Cedar River Watershed worked with CFS and Truterra to implement conservation and agricultural practices to earn MAWQCP

certification. While the Cedar River Watershed Partnership has ended, involvement in this effort helped the MAWQCP build trust and relationships that have carried into other opportunities. For example, the success of the Cedar River Watershed Partnership inspired another watershed-based initiative focused on the Cannon River Watershed. In 2019, the Cannon River Agricultural Collaborative was launched by numerous partners including Truterra, CFS, Compeer Financial, the Cannon River Watershed Partnership, Rice and Steele SWCDs, Environmental Initiative, U of M Extension, Great River Greening, and the MAWQCP. The goal of the Cannon River Agricultural Collaborative is to support farmers implementing practices that improve farm profitability, regenerate the soil, and improve water quality. Since its launch, the MAWQCP and collaborative partners hosted two producer-facing webinars, one of which was focused on the MAWQCP and the other on financing opportunities for implementing soil health practices on farms. In summer 2022, the partners launched a soil health tour, which features producers in the Cannon River Watershed who are using soil health practices on their land.

This past year the MAWQCP was invited to join the Headwaters Agriculture Sustainability Partnership (HASP). Partnership members include Compeer Financial, AgCentric, Houston Engineering Inc., Integrated Crop Management Services LLC, Syngenta, U of M Extension, The Nature Conservancy, Stearns County SWCD, Minnesota Rural Water Association, Minnesota Milk Producers Association, Edge Dairy Farmer Cooperative, Nature Energy, and MAWQCP. HASP projects benefit the environment, economic viability of farmers, and vitality of rural communities. This partnership is a forum where innovative ideas can be considered, supported, accelerated, and implemented with the partnership's diverse experience, skills, and networks. Efforts include maximizing the benefit of manure management and documenting the return on investment for conservation in agriculture.

The USDA's Natural Resources Conservation Service partnership with the MAWQCP extends beyond two consecutive Regional Conservation Partnership awards totaling $18 million through 2025. In October 2020, the Ecosystem Services Market Consortium (ESMC) and The Nature Conservancy (TNC) launched a pilot project in Minnesota to provide financial incentives to encourage more farmers to implement practices that help improve soil health, store carbon in soils, and reduce nutrient run-off from farm fields. The project will test and streamline the creation and sale of environmental credits from farmland. The MAWQCP is a key partner in this project, providing in-kind support and a developed and tested statewide model for baseline risk assessment with tracking for additive practices.

Also related to funding conservation practices on farms, the MAWQCP has been involved with the Minnesota Farmers Union (MFU) and Farmers Legal Action Group (FLAG) to create a new publication: *Farmers' Guide to Carbon Market Contracts*. This is a key resource for producers who are looking to join a carbon market but want a better understanding of the specifications of their participation. The guide distills the complex legal language of the terms and conditions of agricultural carbon market contracts to help producers understand the requirements, benefits, and/or risks of signing up for a market program. The guide was completed in 2022 and will be published in January 2023.

Another unique partnership engaging the MAWQCP features the Minnesota Supercomputing Institute (MSI) and the U of M's College of Food, Agriculture, and Natural Resource Sciences (CFANS) GEMS platform, which facilitates the integration of genetics, environment, management, and socioeconomic data. Starting in late 2021, conservation practice data and maps from the MAWQCP are being input to the GEMS platform to develop artificial intelligence that can identify conservation practices from aerial imagery, and possibly compare the imagery data with water quality measurements to try to measure the impact these practices have on water quality throughout a watershed. GEMS representatives are

still training their artificial intelligence and will continue to improve their technology with support and cooperation from the MAWQCP.

In addition to CFANS, the MAWQCP's engagement with the U of M includes supporting a capstone group through the Humphrey School of Public Affairs. In the 2021-22 academic year, a capstone group conducted research and produced a report for the MAWQCP about carbon credit market opportunities in agriculture. Another group elected to work with the MAWQCP for the 2022-23 academic year and is focusing on researching and recommending strategies to extend the reach of the program and get more farms certified.

Support among the MDA's MAWQCP-partner agencies also remains strong. In 2018, the DNR made a commitment to certify all their owned and managed cropland, which totals approximately 15,000 acres. In addition, the PCA offers certified livestock producers the ability to jump to the head of the permitting line when applying for new feedlot permits, and BWSR approved the program as an alternative practice for complying with Minnesota's Buffer Law. The MAWQCP is also a partner with PCA's Ag/Urban Partnership initiative focused on bringing a diverse group of stakeholders to explore alternative paths to improve water quality. There have been three forums since 2019, and a fourth is planned in 2023. The MAWQCP has been on the agenda and involved in the planning process at each forum.

Another example of the MAWQCP's involvement with partner agencies includes work to design a water quality credit trading pilot in the North Fork Crow River Watershed. The MAWQCP has been involved in planning meetings with PCA, BSWR, and other stakeholders and contributed to a report about the pilot that was released in fall 2021. The MAWQCP could possibly identify producers to participate in future water quality credit trading market in Minnesota.

Outreach and Engagement

As a voluntary program, a robust outreach and engagement strategy has been essential to the MAWQCP's success. The MAWQCP has two target audiences: the primary audience is Minnesota's producers and landowners, and the secondary audience is the program's partners, including its partner state agencies and local SWCDs. The program has dedicated significant time and resources in building an outreach and engagement operation that reaches both audiences. The MAWQCP works closely with the MDA's communications staff to generate press coverage for the certification program.

In January 2018, the MAWQCP conducted a survey of the first 500 certified producers to better understand this group of producers and their motivations, and to inform outreach and engagement efforts. A similar survey was distributed in 2021 after the program reached 1,000 producers. The 2018 survey received a response rate of 50%, while the 2021 survey response rate was 39%. In both surveys, the top three reasons producers participated in the program were: (1) to demonstrate their water quality ethic, (2) to review their farm management practices, and (3) to obtain regulator certainty (Figure 8). Most producers also reported being likely to recommend the program to others in both the 2018 and 2021 surveys. A new question added to the 2021 survey indicated that the primary influence on producers' decisions to implement conservation practices is reducing soil erosion, and nearly 75% of the producers who completed the 2021 survey reported implementing conservation practices after they became certified. The results of both surveys suggest continued commitment among certified

producers to preserving water and other resource quality, as well as satisfaction with the MAWQCP. This information is particularly informative for the program's outreach and engagement efforts and will continue to be used to frame various messages and approaches.

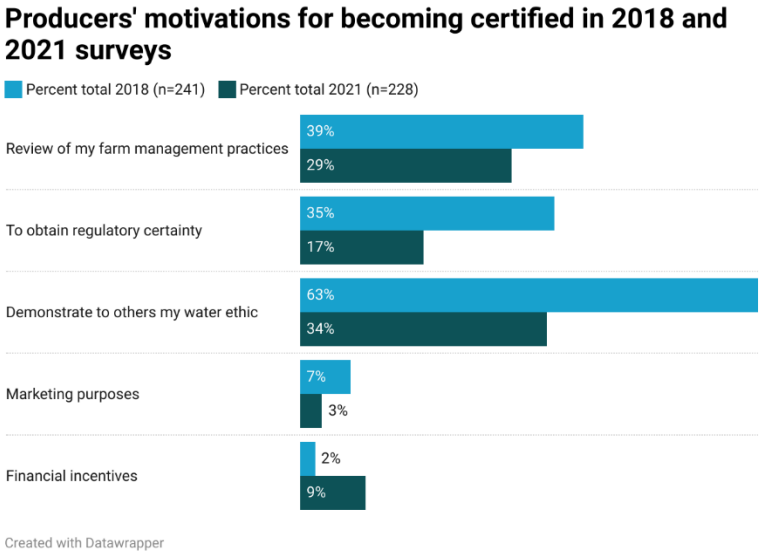

Figure 8: Producers' motivations for becoming Water Quality certified, as reported in the 2018 and 2021 surveys.

In January 2021, the MAWQCP launched a new scholarship program for certified producers enrolling in the Farm Business Management Program. The MAWQCP Farm Business Management Scholarship Program provides scholarships to water quality certified producers to learn business management strategies that will lead to profitable and competitive farming operations. The Farm Business Management Program (FBM) is a one-on-one student-led program designed to provide education to farm owners and operators with the purpose of assisting students in meeting their business and personal goals. The scholarship covers 75% of tuition for new students and 50% of tuition for returning students. Students who receive the scholarship also contribute their financial data to the FINBIN Farm Financial Management Database where analyses and comparisons can be made across operation types, crops, demographics, etc. Through the end of the Fall 2022 semester, over $110,000 have been awarded in FBM scholarships. MAWQCP looks forward to continuing the FBM scholarship program as a means of encouraging additional certifications and providing additional benefits to certified producers.

The MAWQCP is involved in two outreach initiatives focused on sharing the stories of certified producers with ag and non-ag audiences. In 2017, the MAWQCP joined several other state agencies and non-profits as a partner for the We Are Water MN traveling exhibit. The goal of the exhibit is to explore connections between the humanities and water through an exhibit, public events, and educator resources. The exhibit includes profiles of MAWQCP certified producers which tell the story of their farm, conservation practices, and highlight the producer's water quality certification. The stories of MAWQCP certified producers have been included in three statewide exhibit tours in 2018-2019, 2020-2021, and 2021-2022.

In 2019, the MAWQCP launched an online story map to share the stories of individual certified producers and increase awareness about the program. The story map is published on the MAWQCP website and is available on several partner organizations' pages, including the Cannon River Agricultural Collaborative's website and several SWCD websites. As of December 2022, there are over 80 certified producers who have voluntarily shared their story on the map.

Lastly, the MAWQCP engages in traditional outreach efforts including hosting statewide SWCD field staff trainings, program presentations, conference exhibitor booths, field days, the MAWQCP Insider e-newsletter, newspaper articles, and MDA's Facebook and Twitter.

Calculating the exact impact of individual engagement efforts is difficult, but the aggregate impacts have manifested in other ways. The program's name recognition is increasing, and producers seek out certification as opposed to being sought after, as in the early statewide rollout of the MAWQCP. Additionally, MAWQCP staff are frequently approached by producers and staff from agricultural organizations who share positive experiences with all aspects of the certification program.

Looking Forward

The MAWQCP is poised for another year of growth in 2023, including approaching the milestone of 1,000,000 certified acres. There will be many more opportunities with Land O'Lakes, especially centered around the API with the Truterra Sustainability Tool. The MAWQCP Field to Market project has been selected to serve as the example for training other Field to Market members on conducting projects, and the outcomes report of the MAWQCP project will be published in early 2023. The MAWQCP will continue to participate in the Cannon River Agricultural Collaborative and the Headwaters Agriculture Sustainability Partnership. The MAWQCP also looks forward to subsequent reports from FINBIN Farm Financial Management Database on the financial health of certified farms and the expansion of the Climate Smart grants.

To improve program efficiency, keep pace with technological updates in conservation tracking, planning, and management, and expand opportunities for utilizing program data, the MAWQCP is working with MNIT to conduct the design of a new integrated online certification tool and program data management. The new tool will have coordinated data management, allowing certification, record keeping, grant-making, and reviews to take place on the same platform. It will also incorporate more baseline data to improve the accuracy with which fields are assessed. Not only will this new tool help to streamline the certification process, but it will also ensure that the MAWQCP continues to be a national leader in water quality assessment and certification.

The MAWQCP will also use 2023 to further its commitment to maintain and maximize the per acre average cost efficiency of certification. Agricultural conservation, like agricultural production, is expensive. However, from the outset, the MAWQCP has been able to decrease the average per acre cost of certifying a farm, presently maintaining a cost of about $24.00 (Figure 8). Using a comparison of all funds appropriated through the life of the program to the acres certified, the initial $1.5 million received in Fiscal Year (FY) 2014 equaled $541.52 for the 2,770 acres certified in the program's inaugural year. But by FY22, with totals of $22 million across 892,578 acres, the per acre cost was reduced to a $24.65 one-time total cost for 10 years of certification (or, just $2.47/year). These costs are well below the average costs for prominent USDA programs operating in Minnesota. For example, the USDA typically spends about $200 million annually in Minnesota on conservation. In 2022, the Conservation Reserve Program averaged $146.27/acre annually over a typically 10-year contract. The Environmental Quality Incentives Program cost more than $212 per acre in FY21 in Minnesota. Further reflecting the reality of agricultural conservation costs, in FY21 the Conservation Stewardship Program averaged $104 per acre.

Fiscal Year	Total Appropriations	Total Acres Certified	Cost Per Acre
FY2014	$1,500,000	2,770	$541.52
FY2015	$3,000,000	26,400	$113.63
FY2016	$5,500,000	109,667	$50.15
FY2017	$8,000,000	250,400	$31.95
FY2018	$10,500,000	374,488	$28.04
FY2019	$13,000,000	512,416	$25.37
FY2020	$16,000,000	631,662	$25.33
FY2021	$19,000,000	783,505	$24.25
FY2022	$22,000,000	892,578	$24.65

Figure 8: Cumulative Average Cost of Certification per Acre

In addition to providing conservation services at a lower cost, the MAWQCP also overcomes two systemic shortcomings of traditional conservation programs. Most agricultural conservation programs in the U.S. provide farmers limited-duration payments to employ a particular practice which may or may not be maintained when the short-term payments conclude. These programs also typically address conservation at a single location within a farm or production system rather than assessing and assisting treatment efforts for whole-farm conservation. The MAWQCP instead maintains mitigation practices across the entire farm for a minimum of the 10-year term of a farm certification, and does so in a system where additional acres enrolled cost less rather than increasing costs as with other conservation programs.

As a program that provides certified farms with 10 years of regulatory certainty, the MAWQCP was compelled to create a program that systematically identifies and then mitigates risks to water quality on a field-by-field basis. As a result, each field in a farm, and each crop grown on each field, must meet the MAWQCP's criteria to become certified. The certification program's regulatory certainty provision has also created the opportunity to provide conservation in a more efficient manner. Certified producers are provided with the necessary financial and technical assistance needed to mitigate risks to water quality and incorporate those actions in their comprehensive farm management system that isn't dependent upon short-term payments for conservation actions.