

“The Iowa Nutrient Reduction Strategy’s Defining Decade”
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Good afternoon. I’m pleased to be here today representing not only the Iowa Agriculture Water Alliance and our founding members – Iowa Corn, Iowa Pork, and the Iowa Soybean Association - but also the more than 350 partners – many of whom are with us today - who have been hard at work implementing the Iowa Nutrient Reduction Strategy over the last decade.

The Iowa NRS turned 10 years old on May 29th. Reflecting on the first decade of its implementation – the *defining decade* – we have much to be proud of.

Iowa leads the nation in the rate of cover crop adoption! Estimates from a decade ago suggest that there were as few as 10,000 acres of cover crops planted in the state. We now have nearly 3 million acres. Cover crops are increasing faster in Iowa than any other state.

Iowa is the national leader in conservation tillage! 7 out of every 10 acres of Iowa row crops are in no till, strip till, or other forms of conservation tillage. Iowa farmers’ use of no-till has grown from 6.2 million acres in 2010 to 9.5 million acres in 2021.

We’ve nearly achieved the nonpoint phosphorus reduction goal of 29% in the first decade of NRS implementation! And we’re going to achieve this goal in the next decade! However, that doesn’t mean that our work reducing soil erosion and phosphorus loss will be done – far from

it. The ambitious goals in the NRS of reducing Nitrogen and Phosphorus loss by 45% was designed to reduce hypoxia in the brackish and salty waters of the Gulf of Mexico. But phosphorus is the primary resource concern for many of Iowa's freshwater lakes, which may have reduction targets even higher than the NRS goals. Phosphorus loading in Iowa streams has been declining by 2% per year in recent years. Iowa farmers have been heeding the calls to reduce soil erosion since the Dust Bowl, and Iowa leads the nation in terraces, buffers, and grass waterways. As a result, soil erosion in Iowa has decreased by roughly 1/3 since 1980. That must continue to restore Iowa's lakes.

We still have our work cut out for us when it comes to reducing nitrogen loss. We have a long way to go. But we know what we need to do to achieve the ambitious NRS goals. In fact, we invented Nitrogen loss reducing practices like bioreactors, saturated buffers, and prairie strips – right here in Iowa! We've had a 650% year over year average increase in bioreactors and saturated buffers in recent years. The cumulative number of acres treated by edge-of-field practices was 194 times higher in 2021 than it was in 2011. That doesn't include the recent uptick in saturated buffers and bioreactors in the last 18 months due to the 'batch and build' model.

The batch and build concept was originated by Charlie Schafer of Agri Drain, through the Conservation Infrastructure initiative, which was co-led by the Iowa Department of Agriculture and Land Stewardship and IAWA. This was an effort to spur greater engagement of the private sector in implementing the Iowa NRS. Recognizing that state and federal cost share resources by themselves won't be sufficient to fully implement the goals of the Iowa NRS, this initiative was designed to harness economic drivers and market-based solutions to improve water

quality. Charlie, who co-chaired the Conservation Drainage Working Group of the Conservation Infrastructure Initiative along with Chris Hay of the Iowa Soybean Association, pointed out that we needed a new way of doing businesses to scale up bioreactors and saturated buffers. Rather than doing them one landowner at a time, we could batch one-to-two dozen or more of these practices simultaneously, creating efficiencies of scale and lowering the per unit price for these practices. This model allows us to design several practices simultaneously with one company and install several practices in a short period of time using the same contractor.

Charlie pitched this concept to Polk County, which has been leading the charge ever since! Polk County used to do about 1 bioreactor or saturated buffer each year. They just completed over 100 of these practices in just 18 months! Polk County pioneered several innovations for the batch and build, including the single fiscal agent concept, using the same contractor to install dozens of practices at a time, hand-addressed envelopes to increase landowner response, and \$1,000 construction easements per treated tile line to increase landowner adoption. IAWA is proud to partner with Polk County, IDALS and others to expand the batch and build concept throughout Iowa. Polk County is supporting efforts in Dallas, Story, and Boone Counties; and IDALS, Heartland Coop, the City of Cedar Rapids and other partners are expanding the concept to the Cedar River watershed. IAWA will be partnering with the Great Outdoors Foundation and the ICON project to expand the model throughout the North Racoon and Des Moines watershed.

Iowa leads the nation in bioreactors, saturated buffers, and nutrient treatment wetlands. As you heard from Secretary Naig, Iowa pioneered the CREP nutrient treatment wetlands design, and we are now restoring wetlands at a record pace. Because of increased, dedicated funds to

expand water quality wetlands, the cumulative number of acres treated by wetlands has grown from 2,500 acres in 2011 to 139,200 acres in 2021, according to ISU.

Fertilizer Management has been an important component of our progress to implement the Iowa NRS in its first decade, as farmers are increasingly implementing the 4Rs of Nutrient Stewardship – applying the right form of fertilizer in the right place, at the right time and at the right rate. Most commercial Nitrogen applied to corn acres in Iowa continues to occur in the spring, which limits environmental losses. Of the acres where fall Nitrogen is still applied in Iowa, an estimated 86 percent is put on with a Nitrogen inhibitor, which reduces nitrous oxide emissions and nitrate leaching. Corn growers have improved their fertilizer use efficiency in N/P/K by over 100% since 1980.

Total state and federal funding working in support of the Nutrient Reduction Strategy continues to climb higher, with both categories hitting record amounts in the last year. Private investment by farmers and landowners continues to rise as well, boosting the impact of the record-level public investment.

The Iowa Nutrient Reduction Strategy is an urban-rural partnership, and the Iowa DNR leads the point source reduction efforts, which have also made considerable progress in the last decade. From 2015 to 2021, the number of point-source facilities meeting their nitrogen load reduction targets improved from 10 to 47 facilities. During the same period, the number of point-source facilities meeting their phosphorus load reduction targets improved from 3 to 23 facilities. 63 municipal and industrial wastewater treatment plants have committed to constructing upgrades to remove nutrients.

Those are just a few of the highlights for the first decade of implementing the Iowa NRS. There is much to be optimistic about regarding the next decade of implementing the Iowa NRS, including through scaling up the regenerative agriculture practices and systems approach called for in the Iowa Smart Agriculture: Circles of Life Report.

One especially bright cause for optimism is the new Conservation Agronomist position, which is helping us to reach new farmers. You heard earlier today about the importance of reaching middle and late adopters. This concept comes from the Diffusion of Innovation Theory advanced by Everett Rogers, a professor at the Ohio State University who was studying the diffusion of corn hybrids by Iowa farmers. Rogers' model noted that diffusion happens first among innovators and early adopters, and occurs later among middle adopters, late adopters, and laggards. NRCS reaches about 7% of the nation's row crop acres and farmers. These farmers loosely represent innovators and early adopters. Conservation Agronomists help to leverage farmers' most trusted partner – their agronomists – to reach middle and late adopters.

Five years ago, IAWA co-convened focus groups of certified crop advisors and ag retail executives along with the Agribusiness Association of Iowa and Agriculture's Clean Water Alliance. These focus groups looked at how the Ag Retail sector can deliver conservation practices more effectively to their farmer customers. We learned through these focus groups that the Ag Retail sector wants to do more to scaling up conservation practices, but barriers were holding them back. One of those barriers is that conservation practices like cover crops are low margin, particularly when compared to more profitable business lines like fertilizer, crop protection, and related services. While sales agronomist and certified crops advisors have extensive knowledge about nutrient management, they usually lack experience and knowledge

regarding other conservation practices, like cover crops, which can be complicated. For instance, if a farmer isn't getting the right technical advice on cover crops, they might make some rookie mistakes like not having a termination plan ahead of corn, not using enough starter nitrogen with corn, or not setting the downforce pressure on the planter high enough to penetrate a dense mat of cover crops. These mistakes might result in yield drag and unsatisfied customers, so many sales agronomists aren't comfortable with making recommendations on cover crops and potentially risk losing their farmer customers.

The certified crop advisors and ag retail executives in our focus groups indicated that they would benefit from either having neutral, independent third parties to provide conservation technical assistance, or better yet by embedding that conservation expertise directly in their operations. That led to the idea of creating 'conservation agronomists' who would ideally be trained agronomists who already know how to sell products and services to farmers, who would then be trained in conservation practices. The Iowa Soybean Association has pioneered this approach to great success in Iowa. Five years ago, there were 0 conservation agronomists. Today there are 8 Conservation Agronomists in Iowa participating in the ISA Conservation Agronomist Network. By this time next year there will be at least 12 Conservation Agronomists. IAWA has raised over \$1.2M for conservation agronomists in the last couple years, and we're excited to partner with ISA, ACWA, and others to expand on this innovation which is helping to reach those middle and late adopter farmers who would otherwise be very unlikely to walk through the door of their local USDA Service Center and ask for a conservation contract.

Improved fertilizer management continues to be a top priority and there are exciting innovations happening in that space which will pay dividends for improving water quality for

many years to come. ISU's Iowa Nitrogen Initiative will modernize and optimize the Nitrogen recommendations for farmers to maximize productivity while reducing the risk of nutrient losses to the environment. The INI will rely on super computers, artificial intelligence, forecasting and hindcasting to produce globally leading N recommendations.

ISU is also leading efforts to integrate residue management with nitrogen management recommendations. Their research indicates that as corn yields have increased on average 2 bushels per acre per year, corn residue has increased by 100 lbs. dry weight per acre per year. If a farmer is producing 220 bushels of corn per acre, that will generate approximately 5.4 tons of corn residue per acre. That can create management challenges for farmers as their soil can stay colder and wetter longer, delaying planting. And when the residue is moist, that causes increased nitrogen leaching and nitrous oxide emissions. ISU has found that removing 1/2 to 1/3 of the residue improves nutrient cycling, so farmers don't have to add as much nitrogen fertilizer. That is a win-win-win for improving farmer profitability and water quality while reducing greenhouse gas emissions.

Record levels of federal investment for conservation is another reason to be optimistic as we start the next decade of implementing the Iowa NRS. The Inflation Reduction Act (IRA) will provide \$19B for Climate Smart Agriculture, starting this year. USDA is providing nearly \$3B in additional funding starting this year for the Partnership for Climate Smart Commodities. Private investments for improving water quality will continue to climb through increased farmer cost share and private sector investments in programs like the PCSC and RCPP as the federal government provides more public funding for conservation.

The Horizon II Partnership is a great example of a Climate Smart Commodities project. It will expand methane digesters, Prairie Strips, and cover crops. Prairie Strips are my favorite conservation practice because they provide disproportionate benefits for water quality and habitat. The deep rooted, stiff, rugged prairie grasses reduce runoff and soil erosion by about 95% and 90%, respectively, while also reducing phosphorus and nitrogen losses by 78% and 70%, respectively, while also creating wildlife habitat for birds, Monarch butterflies, beneficial insects, and pollinators. Prairie strips also improve soil health, sequester carbon, and reduce flood risk for downstream communities. Iowa trails only Illinois in prairie strips, but Iowa will soon be #1 in that practice as well in the coming years thanks to projects like Horizon II.

The Regional Conservation Partnership Program (RCPP) was created in 2014 Farm Bill with the purpose of targeting Farm Bill funding to priority watersheds and landscapes while attracting substantial additional investment from the private sector to usher in a new era of public-private partnerships. Iowa is #2 in the total number of RCPPs in the nation, trailing only CA. We're #1 in the nation in total funding for RCPPs. IAWA and partners – many of whom are in this room today -have played an important role in scaling up this program. The \$100M Midwest Agriculture Water Quality Partnership is the largest RCPP in the nation. Thanks to our partners it has already improved conservation on over 4 million acres. We're also co-leading the \$33M Iowa Systems Approach to Conservation Drainage which is scaling up both edge-of-field and in-field conservation practices.

As we heard earlier from Shashi, market payments for ecosystem services will play an increasingly important role in the next decade as we transition to a Net Zero Emissions economy. There are over twenty carbon platforms in the US today. Two of them, the Soil and

Water Outcomes Fund and the Ecosystem Services Markets Consortium, pay farmers to improve water quality in addition to sequestering carbon and reducing greenhouse gas emissions. SWOF was created right here in Iowa by the Iowa Soybean Association.

As we heard from Bruno, there are several promising new technological advances like digital agriculture, variable rate technology, precision ag, subfield scale profitability analysis, remote sensing, and hyperspectral soil sensing. These advances will help to improve resource use efficiency, farmer profitability, and environmental outcomes.

We had amazing, visionary leadership a decade ago when Secretary Northey, Dean Wintersteen, and Director Gipp created the NRS. And we have steadfast, determined leadership now in Secretary Naig, Dean Robison, and Director Lyon, who are working tirelessly to implement the NRS – along with more than 350 additional partners.

Now Iowa is leading the nation in numerous conservation practices and overall efforts to improve water quality. But we recognize that we have much more to do. We won't stop until we have at least 12 million acres of cover crops, 120,000 bioreactors and saturated buffers, 7,000 new wetlands and the goals of the Iowa NRS are fully implemented! The Iowa Smart Agriculture: Circles of Life report recommendations for regenerative agriculture and a systems approach will help us to scale up conservation practices that improve water quality.

We want to recognize the tremendous progress that we've made in the defining decade of NRS implementation. A decade defined by collaboration, partnerships, innovation, investment, momentum, strategy, and progress on improving water quality.

We're committed to making even more progress in the next decade of implementing the Iowa NRS.

Join us! The best is yet to come! Thank you!