

# UPPER MISSISSIPPI RIVER BASIN ASSOCIATION MULTI-BENEFIT CONSERVATION PRACTICE WORKSHOP SUMMARY

November 9-10, 2022

## Purpose:

The Upper Mississippi River Basin Association, under the direction of representatives from its member states as well as input from partnering federal agencies, hosted the November 9-10, 2022 Multi-Benefit Conservation Practice<sup>1</sup> Workshop to enhance the collaborative nature of conservation practice implementation and accelerate nutrient reduction in the Upper Mississippi River Basin. The workshop was designed to balance information sharing and breakout group discussions around three topic areas: research, communication, and financial.

## Research Information Sharing

### **The State of the Science: Conservation Practices with Co-Benefits**

#### Presentation Summary

Dr. Matthew Helmers presented an overview of the science and opportunities of conservation practices with co-benefits, such as benefits to soil health, habitat, and nutrient loss reduction potential. The co-benefits for both in-field and edge-of-field practices are described in Iowa State University's *Whole Farm Conservation Best Practices Manual*. For each practice's impact to soil health, nutrient loss reduction, and habitat (i.e., strong, moderate, weak and no impact), there is an associated confidence level in the practice's ability to address the resource concern (i.e., anecdotal evidence, multiple studies, or scientific consensus). Certainly, the benefits received depends on the growth of a practice like a cover crop and how surrounding geographic and climate factors influence that growth.

Helmers explained how additional categories of benefits such as aesthetics, greenhouse gas (GHG) emissions, economic, water quantity and weed/pest suppression could be incorporated to understand additional qualitative and quantitative co-benefits for in-field and edge-of-field practices. For example, a cover crop can add aesthetic benefit to land, but the practice's benefits to GHG emissions and economic value have not been thoroughly investigated. Drainage water recycling or water reuse on site is another practice that, while not ready for implementation yet, can potentially provide co-benefits. There may be benefits to waterfowl habitat and water quantity as more storage is provided on the landscape. However, an unintended consequence is that it could increase salt content on the field.

---

<sup>1</sup> Conservation practices with ancillary, co-benefits or multiple benefits: A term to describe a singular conservation practice that provides more than one beneficial outcome. The beneficial outcomes may be any combination of agronomic, ecological, social, and financial. For example, a wetland has the potential to provide water quality improvement, flood mitigation, carbon sequestration, wildlife habitat, and more. Utilizing practices with multiple benefits may incentivize individuals, based on their goals for their land, to improve natural resources both locally and in the Upper Mississippi River Basin.

Iowa State University is a collaborator on the Agricultural Conservation Planning Framework (ACPF), a free toolbox that uses geo-spatial data to help farming communities address their soil and water conservation needs. A successful project that utilized ACPF is featured in the Story County, Iowa ArcGIS online map. With funding from NRCS, Prairie Rivers of Iowa completed ACPF analysis for two HUC 10 watersheds in the Squaw Creek Watershed. This analysis helped Prairie Rivers develop a watershed plan, which includes implementation of perennial buffer strips, water and sediment control basins, bioreactors, wetlands, and grassed waterways.

The Financial and Nutrient Reduction Tool (FiNRT) provides information about estimated costs and outcomes of ACPF-generated conservation scenarios. The tool allows conservation planners to effectively predict outcomes on their own landscapes. It is currently available in beta versions for Minnesota and Iowa.

### Relevant Links

- Whole Farm Conservation Best Practices Manual: <https://store.extension.iastate.edu/product/15823>
- Agriculture Conservation Planning Framework: <https://acpf4watersheds.org/>
- Story, Iowa ArcGIS story map: <https://prrcd.maps.arcgis.com/apps/MapSeries/index.html?appid=9efd93bae61e4b7386f39d83841db2b2>
- Financial and Nutrient Reduction Tool: <https://acpf4watersheds.org/toolbox/finrt/>

### Discussion

In response to a question regarding whether maintenance costs are built into FiNRT, Helmers replied that it is factored in as well as the opportunity costs for lands out of production.

Given the choice between bioreactor or treatment wetland, which would be selected based on the most co-benefits? Helmers replied that even though wetlands take lands out of production, a wetland is more enjoyable than a bioreactor. He added that there are not many situations where a bioreactor and wetland would be feasible on the same site, which is why a range of tools are needed. A bioreactor works at a field scale and can be positioned next to a grassed waterway.

Helmers provided clarification that prairie strips would be a net benefit for GHG emissions because, in part, the areas used to be cropped. In response to a question about whether placement of prairie strips should be on sloped landscapes or areas more broadly, Helmers said sloping landscapes are typically targeted where there is more erosion. On landscapes that are flatter, there is a concern about tile drainage, but there has been some work done using a camera to investigate runoff of tile drainage on prairie strips. This work has demonstrated that prairie strips are minimally impacted by tile drains. Overall, the greatest benefit of prairie strips is for slowing down surface runoff.

Does the definition of co-benefits consider carbon emissions as well as tradeoffs of different practices? Helmers said the soil health portion of the *Whole Farm Conservation Best Practices Manual* factors in keeping carbon in the soil. He added that co-benefits can describe the impacts of implementing this

practice broadly. However, it is important to consider not just the positive outcomes of a practice, but the negative ones as well.

## **Carbon Reduction Potential Evaluation (CaRPE) Tool: Seize the Carbon!**

### Presentation Summary

Dr. Bonnie McGill said the American Farmland Trust (AFT) developed the [Carbon Reduction Potential Evaluation \(CaRPE\) tool](#) for visualizing and quantifying greenhouse gas (GHG) emissions reductions from the implementation of Natural Resources Conservation Service (NRCS) cropland and grazing land management practices. CaRPE uses emission reduction coefficients from the CarbOn Management & Emissions Tool (COMET) planner coupled with U.S. Census of Agriculture data.

Examples CaRPE tool applications include:

- Mapping percent adoption and total acres of cover crop adoption by county
- Estimating GHG reduction potentials by current adoption levels
- Analyzing scenarios for future GHG reduction
- Summarizing results of multiple implementation scenarios at county to national scales

The CaRPE tool can be used as a mechanism to compare practices (including their costs and location of greatest impact) for the purpose of prioritizing implementation practices for optimal benefits. In the state of Iowa, Washington County has a conservation practice adoption rate of 16 percent and Webster County's adoption rate is 1.8 percent. McGill demonstrated the carbon reduction potential if Webster County's adoption rate increased to that of Washington County. In response to a question from McGill, Helmers explained that Washington County has a long history of conservation and was one of the first counties in Iowa to adopt no-till agriculture.

### Relevant Links

- A demonstration of the CaRPE tool: <https://farmland.org/project/the-carpe-tool/>
- Briefs on demonstrating the use of CaRPE for five states across the U.S.: <https://farmlandinfo.org/publications/carpe-results/>

### Discussion

A participant raised concern of overestimated benefits of soil health management to reduce greenhouse gas emissions. In response to a related question, McGill said a modest adoption of conservation practices can reduce around 20 percent of agricultural emissions. It is a lot harder to reduce nitrous oxide. AFT is interested in quantifying those potentials nation-wide.

McGill explained that the Colorado State University COMET team is responsible for adding practices to CaRPE.

In response to a question about whether CaRPE incorporates different soil types and their carbon sequestration potential, McGill explained that users can map weighted the emission reduction coefficient in order to assess the potential of a particular soil type. This can also help land managers and policy makers focus resources in certain geographic locations.

A participant asked how CaRPE might consider annual variability in cover crop establishment and biomass. McGill said the data include “yes” or “no” as to whether the farmer planted a cover crop. The Operational Tillage Information System (OPTIS) tool uses remote sensing to see if the field greens up during the winter. Noting that OPTIS is updated every five years as the Agriculture Census is released, McGill asserted that more frequent remote sensing surveys would allow for more ground truthing for CaRPE. Another participant mentioned the existence of a locally calibrated tool similar to OPTIS that conducts routine tillage and erosion airborne surveys, which show the level of residue on a field. The year-to-year differences are astounding, especially in northern climates. McGill agreed that is a limitation of CaRPE.

In response to a participant question, McGill replied that CaRPE is geared for use by land managers and policy makers. Farmers generally use the COMET farm tool.

In response to a participant question, McGill replied that updating CaRPE should be relatively expedient following the publication of the recent Agriculture Census given that the code is already developed.

COMET is preparing to publish a tool called COMET Explorer, which has some functional overlap with CaRPE.

In response to a participant question, McGill would need to refer to the COMET planner documentation regarding how it indicates uncertainty. A participant affiliated with the COMET tool added that uncertainty is a challenging topic particularly at the field scale. It is also a challenge to communicate the field level uncertainty to a farmer. A participant asked if there is a role for governments to deal with the uncertainty. For example, could governments utilize the modeling/estimation results and address the uncertainty as the science evolves. McGill noted that approach may work for carbon markets.

## **Continuous Improvement Accelerator: Enabling Supply Chain Partners to Design and Implement Sustainable Projects**

### Presentation Summary

Paul Hishmeh introduced Field to Market as an alliance of organizations aligned around continuously improving the sustainability of commodity crop production, including growers, civil society, affiliates, brands and retail, and agribusiness. Scaling up sustainable agriculture is not possible without the golden triangle of human dimensions support, financial incentives, and technical assistance.

Field to Market’s members must carefully consider farmers’ values and perceptions to drive change on the ground. Mobilizing farmers means understanding their view of profitability and influence from the downstream supply chain, underscoring that an intermingling of economics and personal independence is a central driver to the slow or stalled uptake of change across agriculture. While farmers understand the long-term benefit of conservation practices, the short-term risks to productivity and profitability often create barriers to adoption.

Hishmeh emphasized a system-wide perspective to make scalable change. The Continuous Improvement Accelerator program supports farmers and organizations in making decisions on agricultural landscapes through stakeholder collaboration, local conservation solutions, flexible approaches, verification structures, and transparency. Examples of flexible pathways through Continuous Improvement Accelerator include incubation, insight, and innovation. Incubation projects can focus on a particular natural resource concern. An agribusiness company works with hundreds of farmers to increase understanding of improving soil carbon through soil testing and analysis. Insight projects are focused on increasing transparency through benchmarking progress against environmental goals. An innovation project provides in-depth technical or financial assistance to reduce risk associated with trying new practices. PepsiCo and Unilever are supporting more than 600 Iowa farmers to scale up regenerative agriculture by reducing financial risks associated with adopting soil health practices such as cover crops.

Financial incentives are integral to scaling up conservation. Field to Market's Blueprint for the Value Chain includes a suite of innovative financing solutions identified to address key farmer barriers. None of these would be possible without engaging financial partners and conducting pilot projects to test and tailor financial mechanisms.

#### Relevant Links

- Field to Market Continuous Improvement Accelerator: <https://fieldtomarket.org/continuous-improvement-accelerator/>
- Field to Market, Blueprints for the Value Chain: [https://fieldtomarket.org/media/2022/01/FTM\\_Blueprints-for-the-Value-Chain-Report-WEB.pdf](https://fieldtomarket.org/media/2022/01/FTM_Blueprints-for-the-Value-Chain-Report-WEB.pdf)
- Field to Market, 2021 National Indicators Report: <https://fieldtomarket.org/national-indicators-report/>
- Field to Market, 2022 Climate Compendium: <https://fieldtomarket.org/publications/climate-compendium/>

#### Discussion

Regarding the statistic Hishmeh provided that 74 percent of farmers say profitability is a driver, a participant has experienced farmers who were not aware of their profitability nor are concerned with corporate sustainability.

In response to a question about the requirement of partnerships, Hishmeh explained that partnerships happen in a number of ways. A small percentage of companies are engaged in projects, while other companies are involved in the development of metrics and standards. Field to Market does not focus on establishing collaborations. Most companies elect to use the Field to Market framework. Hishmeh recalled that many of the projects start organically.

Another participant offered "boots on the ground" feedback and suggested approaching cooperatives and agronomists directly. Hishmeh expressed appreciation for the offer, acknowledging that Field to Market wants to make the project process easier for members.

## Breakout Group Reports: Research

Notes: The ideas presented below were consolidated from eight breakout groups. The raw breakout group notes are available upon request. Additionally, the ideas below are listed in a singular topic area but do cross multiple disciplines.

Focused Question: *What tools are missing that could aid practitioners in increasing the adoption of conservation practices with multiple benefits?*

### Discussion:

- A) There are enough tools in existence; however, there are needs to improve awareness of and accessibility to existing tools (including training), integrate and simplify existing tools
- B) Existing tools have limitations; improvements could include:
- Standardizing the inputs and outputs used in existing tools – e.g., create industry standards
  - Gear existing tools to be more locally relevant to end users – e.g., engage farmers in research and tool development
  - Clarify when and how existing tools are used (or could be used)
  - Expand tools to other agricultural products beyond corn and soybean production
  - Connect existing tools to farmers to inform their on-the-farm economics
- C) Tools needed for specific audiences include:
- “Whole Farm Evaluation” to help landowners assess what conservation practices are realistic on a given farm
  - Help non-farming landowners better define goals and objectives for their land
- D) Other tool needs
- Evaluate farmland management options over a longer timeframe – e.g., 5 to 15 years
  - Account for differences in regional and climatic differences
  - Estimate impacts of various policy decisions
  - Design tools for different scales – e.g., on the farm and system scale
  - Incorporate updated climate projections – e.g., align existing science of carbon and greenhouse gases
  - Tailor tools to categories of practices

- Develop useful, accessible packaging options of tools – e.g., static maps
- Assess tradeoffs associated with conservation practices
- Adapt nitrogen tools for phosphorus tools
- Estimate profitability– e.g., is a practice profitable?
- Expand the Iowa State University’s *Whole Farm Conservation Best Practices Manual* with additional metrics

Focused Question: *What are the research gaps that may increase understanding of conservation practices with multiple benefits?*

Discussion:

- A) The consequences of practices – e.g., a wetland has a lot of benefits but also high risks
- B) The consequences of failure or counterfactual research – e.g., what happens if a particular action is not taken?
- C) System-scale research on interactions of various practices over long time periods
- D) Complexities of nutrient cycling
- E) Legacy nutrients
- F) Tradeoffs of conservation practices
- G) Nitrous oxide emissions
- H) Co-benefits that extend beyond three-year cycles
- I) Conservation practice efficiency over a wide variety of places, soil types, etc.
- J) Co-benefits that go beyond carbon or water improvement
- K) Alternate cropping systems and marketability of the products – e.g., perennials
- L) Holistic life cycle approach across multiple fields and multiple practices
- M) Return on investment of soil improvements over longer periods of time

## Communication Information Sharing

### **Science of Behavior: What We Know and What it Means for Conservation Practice Adoption**

#### Presentation Summary

Dr. Dara Wald described that the definition of conservation carries different meanings and touches multiple disciplines: behavioral economics, psychology, and sociology. Ultimately, multiple factors encourage behavior, and the “right” motivator will depend on the behavior in question, the target audience, and the social and practical context. People are not static; they are complicated, and studying human behavior is challenging.

Combining these disciplines allows advocates to tailor the correct motivator to the behavior, audience, and social context. To do this, advocates must identify their audience’s thinking, motivations, barriers, and values. They must consider the factors which encourage behaviors. There is no uniform messaging. One example is Texas Runs on Water. The organization is effective at motivating action by connecting with people’s values. Community-based, direct, personal contacts are the most advantageous approaches. Relationships allow individuals to consider new ideas, and community norms can strengthen acceptance.

#### Discussion

In response to a participant question about the process for getting to know an audience within a time constraint, Wald suggested starting every project with qualitative data analysis. However, face-to-face engagement and listening does take time, but the outcome or behavior change will be better.

In response to a question about how a government agency can engage in dialogue, Wald suggested using plain language and avoiding any misconception of being insulting. Wald encouraged connecting first on the personal level.

### **Incorporating Behavior Change Science for More Effective Conservation Outreach**

#### Presentation Summary

Dr. Adam Reimer discussed National Wildlife Federation’s (NWF’s) approach to incorporate behavioral change into outreach to landowners with the goal of increasing in-field conservation practice adoption. NWF created two programs based on 1) expanding on the traditional outreach model, 2) diffusion of innovations theory, 3) social norms and conservation culture, and 4) messaging to non-adopters. The programs are Grow More and Conservation Champions. Grow More hosts training workshops for conservation professionals focused on behavioral change science, communications, and messaging innovation. Conservation Champions provides grants to farmers and outreach partners to creatively reach out to new farmer audiences.

The central challenge of conservation outreach is reaching audiences that are not already involved or listening. Traditional outreach models assume that availability of information is the primary barrier to adoption. Although information dissemination is a limiting factor for behavioral change, other barriers can also affect behavior. Outreach should address the most relevant and impactful barriers and



motivations for producers. The traditional outreach model is poorly suited to the decision making of middle adopters.

The diffusion of innovation theory describes the process through which change happens and can aid conservation professionals in better communicating with different categories of adopters. Adopters are divided into categories based on the length of time taken to adopt new concepts. Early adopters are more open to ideas and do not respond as readily to social pressures. Middle to late adopters are uncomfortable with new ideas and are concerned with what others are doing. Early adopters are generally driven by future benefits whereas late adopters are driven by avoiding risk. The “tipping point” is the point at which adoption transitions from the early adopter group to majority groups. Reaching the tipping point can be achieved more quickly by building social acceptance and maximizing the success of innovations. Reimer explained that common barriers changing the behavior of middle adopters include that new practices have higher standards, messages do not fit decision making models, middle adopters do not like to admit they are wrong, and conservation practice adoption has unclear and complicated steps. Reimer suggested providing appropriate motivations for adopters, speaking your audience’s language, solving problems with your audience, placing change and risk into context, and providing clear steps for success. Messages that resonate with farmers included legacy values, stewardship, personal reputations, and supply chain sustainability.

#### Relevant Links

- Grow More website: <https://growingoutreach.nwf.org/grow-more/>
- Conservation Champions website: <https://growingoutreach.nwf.org/conservation-champions/>

#### Discussion

In response to a question about how close we are to reaching the tipping point between early and middle adopters, Reimer replied that it varies widely by location and the practice or system.

### **Illinois Farm Bureau Nutrient Stewardship Programs and Initiatives**

#### Presentation Summary

Raelynn Parmely described Illinois Farm Bureau (IFB) programs and the way the organization communicates with its member farmers. IFB was established in 1916 as a resource for farmer education, policy development, advocacy, and leadership. Farmers are involved in nearly all areas of IFB activity. The Environmental and Natural Resource Team within IFB works with farmers, regulators and agency staff, agriculture industry professionals, and researchers. The Team has established four water quality priorities: education and outreach, research of BMPs to reduce nutrient loss, farmer implementation efforts, and demonstrating progress toward long-term goals of the Illinois Nutrient Loss Reduction Strategy.

IFB uses a range of communication practices to reach farmers as member demographics are evolving. Illinois farmers are aging. The average size of a farm is 372 acres and is trending larger. The majority of farmers specialize in grain crops, but Illinois is still competitive in producing pumpkins, livestock, and trees.

Parmely described the types of print media used to reach IFB members: Farm Week/FarmweekNow.com, organization newsletters, county farm bureau (CFB) publications, mailings, and other print publications (reports, fact sheet development, CFB-led research support). Digital media and campaigns include the RFD radio network, IFB social media, IFB websites, IFB campaigns, and internal resources for CFBs. These efforts combined reach wider audiences than a single method would.

The most important tool employed by IFB is building personal connections. IFB connects with CFB boards and leaders and forms individual farmer connections through programs such as the Nutrient Stewardship Grant Program.

Parmely shared potential areas to improve communication. Internet connections in rural areas are a challenge and the demographics of Illinois farmers are changing. Farmers are also aging out of their work. Younger farmers are choosing to live in urban areas and operate on smaller scales. Finally, Parmely shared topics that IFB members are asking for more information. Some of those include agronomics/science, economics, climate science, fertilizer, and crop protection product access.

### Discussion

In response to a question, Parmely said the most effective messenger about climate information depends on the specific question and geographic location.

### **Breakout Group Reports: Communication**

Notes: The ideas presented below were consolidated from eight breakout groups. The raw breakout group notes are available upon request. Additionally, the ideas below are listed in a singular topic area but do cross multiple disciplines.

Focused Question: *What curricula, training, and studies on implementing conservation practices with multiple benefits would help advance the adoption of the practices? And how can these items be delivered to target audiences?*

### Discussion:

Participants raised the following actions to improve communications for the purposes of accelerating the adoption of conservation practices:

#### A) Curricula/studies

- Understand different motivations between earlier adopters (motivated by sustainability, leadership, and climate) and middle adopters (motivated by legacy and risk reduction)

#### B) Training/education

- Host “train the trainer” events for practitioners
- Provide training for all agents (regardless of affiliation) and practitioners to speak to multiple programs and practices simultaneously

- Create a “conservation concierge” to help farmers navigate all the various tools and programs
- Provide behavioral change communication, marketing, and human dimensions training to technical assistance staff
- Develop communications strategies and messages for communicating about uncertainty to farmers
- Develop continuing education courses – e.g., short courses for conservation professionals and community college courses for conservation careers
- Invest in FFA, 4-H, and other agricultural-based youth programs for recruiting careers in conservation
- Create internships in conservation agriculture

#### C) Tools/resources

- Create a central, user-friendly online repository that is searchable by practice for the purposes of identifying applicable funding sources and points-of-contact
- Develop a chain-of-command tool – e.g., who to contact to resolve issues
- Disseminate and use FarmDoc sample contracts

#### D) Networking/outreach

- Increase the capacity of farmer-to-farmer networks and facilitate farmer-to-farmer outreach
- Bridge connections between local conservation and NRCS staff
- Connect absentee landowner with renters to help the two parties discuss goals and objectives for managing the land
- Create forums where only farming is allowed to be discussed – i.e., no divisive non-related topics such as religion and politics
- Test soil core to measure ditch runoff from tile systems – i.e., the topsoil farms may be losing
- Connect consumers and farmers – e.g., Kernza®; consumers then become advocates for farmers

Focused Question: *Are there ways of motivating adoption beyond formal training? What examples are there of non-traditional outreach approaches?*

#### Discussion:

- Convene events and employ marketing to sell the problem, not the practice

- Host a monthly “watershed café” to train conservation staff on sales techniques and landowner relationship skills
- Host social events not on a farm field in order to provide a nonthreatening and welcoming environment to facilitate trust with farmers
- Encourage farmers to host winter dinners at their farm, inviting other local farmers and neighbors to socialize
- Incentivize and reward highly effective NRCS representatives
- Create a retention fund to stabilize staffing in soil and water conservation districts and NRCS
- Develop and implement a “text network” for farmers
- Develop and fund a government demonstration farm (state or county) that allows the respective government entity to assume the risk
- Employ training and professional development and encourage farmer mentors for new conservation staff – e.g., farmer ride-alongs and farming 101 workshops
- Create a professional development plan with recommendations for subject matter related to watershed conservation that would be helpful for academic curriculum
- Host an environmental performance competition, requiring self-formed teams to determine inputs and outputs throughout a year, test the inputs and outputs on a plot of land and evaluate outcomes and return on investment

A group also raised the need for sister state agencies to communicate consistently about conservation practices.

## **Financial Information Sharing**

### **Scaling Climate and Water Smart Cropping Systems**

#### **Presentation Summary**

Dr. Tessa Peters and Sienna Nesser described the work of The Land Institute (TLI) and University of Minnesota Forever Green Initiative (FGI) to make big changes to existing agricultural systems, displacing them with new, climate resilient crops that also help farmers and businesses meet their bottom lines. A transition to this new system requires numerous innovations to be achieved, be adopted, and be scaled, requiring regulators, financial, and economic drivers to create the infrastructure. In addition, a coalition of diverse partners is key to the success.

Perennial grain crops are a driver of this new system due to their resilience and ability to provide ecosystem services such as preventing nutrient leaching, reducing erosion, increasing water quality, and generating income for farmers in the winter season. FGI has a suite of perennial, winter annual crops, and

native woody crops. Leading the way is Kernza<sup>®</sup>, winter oilseeds, camelina and pennycress. These crops have undergone significant breeding and agronomic research in addition to having well developed end uses. At a finer scale, FGI is involved in wayfinding, stewarding innovation, brokering connections, developing pilot programs, and more to connect this research with growers, producers, markets, and consumers.

FGI and the Minnesota Department of Agriculture partnered to create the Forever Green Economic and Environmental Clusters of Opportunity (ECCO) program to promote Kernza<sup>®</sup> in ways that allows growers to successfully market and incentivize them to plant Kernza<sup>®</sup> on acres that have the most to gain from continuous living cover (CLC). ECCO offers technical assistance, payments for ecosystem benefit and economic risk, and seed and germination testing. Over \$70,000 has been provided to growers so far, with 700 acres covered in the 2021 and 2022 growing seasons. In summer 2023, Minnesota Department of Agriculture will be deploying a CLC Value Chain Development Fund to distribute grants to small and medium sized businesses working in hazelnuts, regenerative poultry, camelina, and Kernza<sup>®</sup> products.

Peters shared that there were nearly 4,000 acres of Kernza<sup>®</sup> growing in 2021. That number is expected to increase to 6,000 acres in 2022.

As a result of a USDA grant, TLI convened Kernza<sup>®</sup> licensees from across the supply chain to build a new type of commodity group that uses the method of steward ownership and move toward a model that would allow the trademark to be owned directly by these stakeholders.

### Discussion

A participant asked for clarification on whether the CLCs are intellectual property. Peters said TLI has not pursued plant variety protection at this time. A license is required to grow or produce the CLC seeds and producers have to be certified to grow it.

In response to a question about certification process to grow CLCs, Peters said, for Kernza<sup>®</sup>, FGI staff will have a conversation with the producer to inform them of the market and the types of financing available. Farmers are approved to grow Kernza<sup>®</sup> on a case-by-case basis. This is different from the other CLCs.

In response to a question of what drives producers to grow CLCs if there is a risk, Nesser replied that FGI staff work with a lot of innovative growers who are excited about a new crop and want to change the way they farm. The risk management payment ensures producers that they will get the support they need to keep growing Kernza<sup>®</sup>. It is a big risk, and it is expensive for farmers to invest in their land and buy seed right now.

Grazing is another way to manage risk. If there are years that Kernza<sup>®</sup> does not produce grain (like in 2021), a lot of growers mowed or grazed their Kernza<sup>®</sup> field. Peters added that, if producers are able to utilize the Kernza<sup>®</sup> for forage, then they will break even. The risk payments are additional to that. Growers anecdotally say that Kernza<sup>®</sup> is the only green thing on their farms.

A participant asked what TLI and FGI is aiming to achieve by lengthening the duration of Kernza<sup>®</sup> stands if each stand has a two- to three-year productive duration at which point it needs to be plowed and replanted. Peters replied that TLI encourages growers to plant for three to four years of production and another one to two years of forage production. The goal is to extend that by evaluating management techniques because there is a dramatic decline of productivity in year three in the Upper Midwest.

## Ecosystem Service Markets Overview: Minnesota Pilot Project to Increase Farmer Participation in Ecosystem Services Markets

### Presentation Summary

Rich Biske said The Nature Conservancy (TNC) has had growing interest in ecosystem services markets, which in part stem from the organization's ecosystem and agriculture priorities and the goals established by Intergovernmental Panel on Climate Change for greenhouse gas reduction and by the Hypoxia Task Force for nutrient reduction. Ecosystem service markets (ESMs) are of growing interest for their role related to private sustainability goals, culture in companies, and consumer-based demand for sustainable agriculture. ESMs consist of in-setting, increasing sustainability within the supply chain, and offsetting, paying for tradeable pollution offset. TNC's focus has been on in-setting four measurable ecosystem services: carbon emissions, water quality, water quantity, and biodiversity.

At its core, Ecosystem Services Market Consortium (ESMC) is not just about carbon but multiple benefits having local and larger spatial scale climate impacts. ESMC compensates farmers and ranchers who improve the environment by creating scalable ecosystem service markets. ESMC creates multiple credits, has open protocols, and offers technology and soil testing to root credit validation in the data. TNC recognizes the importance of the trusted farmer advisor for promoting improved stewardship with nutrient efficiency, soil health, and edge-of-field practices.

The goals of the Minnesota pilot are to understand implementation efficiencies and economic drivers across a corn, soy, and livestock cropping systems. The project is led by TNC, ESMC, and the Headwaters Agriculture Sustainability Partnership and includes many partners specializing in farmer outreach, field work, platform integration, farm economics, market demand, and research. The pilot phase began in central Minnesota and has since expanded to the rest of the state (with the exception of the north east portion of Minnesota).

Producers are able to enroll any acreage amount and phase in additional acreage over time and are not required to relinquish data ownership. Right now, the focus is on cover crops, nutrient management, and some edge-of-field practices. A big part of the producer payment is rigorous soil testing, conducted over five years, to verify, generate, and sell the credits/assets. ESMC requires producers to commit for two years, with an option to enroll in a five-year agreement at the end of their pilot contract. If the landowner chooses not to re-enroll, TNC wants to understand the pitfalls. The Minnesota pilot goal is to enroll 50,000 acres. To date, a little over 10,000 acres have been enrolled in the program. Twenty enrollment specialists have been trained, and \$2 million in credit buyer recruitment funds have been raised.

Biske said the pilot has generated a lot of lessons learned. Data entry is time consuming, soil testing is extensive and will require large contracts, soil health technical assistance is important, carbon markets need more stability, and supply chains are complicated.

### Relevant Links

- Ecosystem Services Market Consortium website: <https://ecosystemservesmarket.org/>
- Acres for Water, Minnesota pilot website: <https://www.acresforwater.com/esmc>

## Discussion

A participant asked what if soil testing shows no change in five years? In Iowa, researchers have found that there is no change in carbon in a prairie over 20 years. Biske replied that the risk is buffered to the farmer. They are paid \$20 per acre for two years no matter what. If soil tests do not change, they may only receive the participation payment.

A participant asked if there is a mechanism to distribute payments to a larger group of landowners in an instance of constructing a wetland that offsets a large drainage area. Biske cited an example of a dairy producer wanting to conduct facility upgrades, but it was not associated with any drainage work, so the cost share project was not carried forth.

A participant asked if Biske worries about regulation of these markets and whether TNC would be in a situation where a different modeling system than COMET is built. Biske said he is concerned about this. But, TNC knew that something new needed to be done and proposed a lower risk proposition for both TNC and the producer.

A participant asked if TNC is claiming credits carbon or phosphorus reduction credits on behalf of the farmers. Biske replied that private investors, such as Target, pay \$20 per acre. TNC does not take any credits and explains to corporate partners that the credit should not be counted multiple times.

## **Single Fiscal Agent Model and Reducing Implementation Barriers**

### Presentation Summary

John Swanson introduced the “batch-and-build” model, which has changed the way Polk County Public Works implements conservation practices. Despite knowing every funding source to help farmers in Polk County, Swanson and his team continually experienced barriers to practice implementation. Between 2015 to 2020, four saturated buffers and two bioreactors were installed despite high cost-shares, field dates, watershed outreach, and surveys on numerous sites. Polk County staff were supposed to install 100 bioreactors and saturated buffers. Staff took a step back to review the watershed plan, understand barriers, and formulate a different approach. Swanson noted some of the barriers to adoption include conservation practice planning mentality, lack of understanding around practices, mixed program direction, and tax considerations.

After a chance meeting between a watershed coordinator, soil and water district commission, and a local agricultural business leader, the batch-and-build idea was born. It involved 1) methodologically targeting landowners based on suitable land for a saturated buffer; 2) designing a new funding model; 3) grouping sites together for more efficient survey, design, and construction; 4) developing projects in different sizes to find most efficient option; and 5) providing a landowner incentive.

Through the batch-and-build approach, Polk County accomplished in two years what had been achieved in the previous 10 years in terms of practice implementation. Swanson provided more specifics on what Polk County staff did: ACPF was used to create a priority list of 75 fields in year one that would have a high chance of success. Then, Polk County staff employed targeted outreach instead of field days. Staff would send a letter to the landowner about the desire to survey their field and follow up with a phone call in seven days. Polk County surveyed 130 outlets in 2020 and more outlets in 2021. This required a standardized and efficient surveying process.

The most important part is the funding model. Polk County is the designated fiscal agent to take in all of partners' funding. The funding is utilized to bid out projects in groups. Individual construction easements are in place with the landowner to ensure there is permission to build particular practices. Partners agree to the project design. A 10-year maintenance agreement is signed. The landowner is paid \$1,000 per tile outlet successfully installed. Swanson said the challenges remain, but they are significantly less impactful. All of this is accomplished in three interactions with the landowner. The other benefit of the model is having direct communication between the Polk County designated project manager and the landowner.

In 2021, 51 installations were completed in Polk County, 85 installations were completed in Polk and Story County in 2022, and, in 2023, similar efforts are expanding to Dallas and Boone Counties and in portions of northeastern Iowa.

Challenges remain, including cultural resources, FSA and CRP funding, flood fields, and drain tiles not documented by the landowners.

Another benefit of having relationships with landowners has enabled for Polk County to facilitate water monitoring with the landowner and researchers.

#### Discussion

In response to a question on how maintenance agreements work, Swanson replied that if there is damage from mowing, the landowner just has to call to get it fixed. Most practices generally do not need to be maintained once installed. When a site does require more active management, then there are more in-depth conversations. The practice has to be left in the ground for 10 years even if the land is sold.

Swanson shared that the batch-and-build model will be expanded to agricultural wetlands in 2023. The model can be utilized in other states. The lessons learned can be applied; it is a matter of figuring out local resources.

A participant asked if Polk County utilizes the established communication lines with the landowner to discuss nitrogen application rates and cover crops. Swanson said installing a bioreactor or saturated buffer is the door opener. The landowner will typically call again about a different practice and, if that occurs, Swanson and his team will provide the resources.

#### **Breakout Group Reports: Financial**

Notes: The ideas presented below were consolidated from eight breakout groups. The raw breakout group notes are available upon request. Additionally, the ideas below are listed in a singular topic area but do cross multiple disciplines.

Focused Question: *What research and tools are missing that could aid practitioners in increasing conservation practice with multiple benefit adoption?*

#### Discussion:

- Increase the awareness and understanding of the available financial programs



- Offer training for public staff to help remove barriers to the adoption of conservation practices, particularly to enable more batch-and-build approaches
- Map private programs to understand where funding is going and how it could be better deployed
- Align public and private program frameworks
- Understand financial motivations and how they vary between non-operating versus operating landowners
- Shift the focus on yield to profitability and return on investment
- Help operating landowners develop business plans and ensure they feel financially competent
- Expand widespread premium discounts on cover crops e.g., Illinois Department of Agriculture's Fall Covers for Spring Savings program
- Determine the worth of a carbon credit
- Identify single points-of-contact for USEPA, NRCS, and cost share programs
- Develop tools for practitioners to provide a logic map and make farmers' decisions simple
- Test innovative financial mechanisms at a pilot or demonstration scale
- Develop opportunities to innovate, drive, and incentivize within existing programs – e.g., EQIP and SRF
- Explore how financing might be integrated within grant-based options
- Develop a platform to donate to support the implementation of conservation practices e.g., GoFundMe

*Focused Question: What financial information and tools have been developed to help explain benefits to a landowner?*

*Discussion:*

- Clear30 (longer term contracts for perennial cover)
- Nitrogen fertilizer rates – e.g., instead of language around not overapplying fertilizer, asking fertilizer rates to be reduced by 10 percent
- Illinois Sustainable Agriculture partnership's Cover Crop Incentive Directory
- Customer relationship management programs that track relationships and how effective the program is to recommend practices

*Focused Question: How can the financial industry be engaged in this topic?*

Discussion:

- Work with financing institutions and corporations wanting to mitigate climate impacts by creating bankable projects
- Encourage loan officers to monetize sustainable practices
- Repackage impact capital to financial institutions – e.g., incentivizing with interest rates
- Assess environmental benefits in addition to economic return-on-investment
- Lower interest rates to farms that use sustainable practices or modify/lower repayment schedule
- Change the way land value and taxes are assessed to consider investments made in conservation

The workshop was made possible with a grant from the U.S. Environmental Protection Agency Office of Water

## Participant List

<u>Organization</u>	<u>Name</u>	<u>Position</u>
Agricultural Drainage Management Commission	Keegan Kult	Executive Director
American Farmland Trust	Dr. Bonnie McGill	Senior Climate and Soil Health Scientist
American Farmland Trust	Kris Reynolds	Midwest Director
Clean Wisconsin	Scott Laeser	Water Program Director
DJ Case	Rick Clawson	Multimedia Specialist / Project Manager
DJ Case	Phil Seng	President
Field to Market	Paul Hishmeh	Data & Technology Director
Forever Green Initiative, UMN	Sienna Nesser	Continuous Living Cover Adoption Specialist
Heartland Co-op	Ruth McCabe	Senior Conservation Agronomist
Heartland Co-op	William Hoffman	Conservation Agronomist
Heartland Co-op	Emery Davis	Conservation Agronomist
Illinois Department of Agriculture	Michael Woods	Division Manager
Illinois Environmental Protection Agency	Trevor Sample*	NLRS Coordinator
Illinois Farm Bureau	Raelynn Parmely	Program Manager
Illinois Nutrient Research and Education Council	Julie Hewitt	Executive Director
Iowa Department of Agriculture and Land Stewardship	Matt Lechtenberg*	Water Quality Initiative Coordinator
Iowa Department of Natural Resources	Adam Schnieders*	Water Quality Resource Coordinator
Iowa Nutrient Research and Education Council	Ben Gleason	Executive Director
Iowa Soybean Association	Heath Ellison	Senior Conservation Agronomist
Iowa State University	Tom Isenhardt	Professor
Midwest Row Crop Collaborative	Ariel Kagan	Director, Ag Strategy
Minnesota Department of Agriculture	Margaret Wagner	Fertilizer Non-Point Section Manager
Minnesota Department of Agriculture	Brad Jordahl Redlin	Water Quality Certification Program Manager
Minnesota Pollution Control Agency	Dave Wall*	Research Scientist
Missouri Corn Growers Association	Kurt Boeckmann	Director of Environmental Programs
Missouri Department of Agriculture	Ken Henderson	Director, Grain Inspection Division

Missouri Department of Natural Resources	Chris Wieberg	Director, Water Protection Program
Missouri Department of Natural Resources	Jake Wilson	Unit Supervisor, Soil and Water Conservation Program
Missouri Department of Natural Resources	Jim Plassmeyer	Director, Soil and Water Conservation Program
Missouri Department of Natural Resources	John Hoke	Branch Chief, Water Pollution Control Branch
Missouri Department of Natural Resources	Heather Peters	Section Chief, Water Protection Program
Missouri Department of Natural Resources	Trish Rielly	Unit Supervisor, 319 Unit
Missouri Department of Natural Resources	Victoria Starnes	Environmental Scientist / NLRS Coordinator
MN Board of Water and Soil Resources	Suzanne Rhees	Special Projects Coordinator
National Wildlife Federation	Adam Reimer	Conservation Outreach Specialist
North Central Region Water Network	Joe Bonnell	Interim Outreach Program Manager
North Central Region Water Network/ University of Wisconsin Division of Extension	Jenny Seifert	Watershed Outreach Specialist
USDA Natural Resource Conservation Service	John Bullough*	Conservation Initiatives Coordinator: Water Quality
USDA Natural Resources Conservation Service Iowa	Scott Cagle	Asst. State Conservationist (Partnerships)
USDA Natural Resources Conservation Service Missouri	Scott D. Edwards	State Conservationist
USDA Natural Resources Conservation Service Wisconsin	David Gundlach	Resource Conservationist - GLRI, NWQI & MRBI
USDA Natural Resources Conservation Service Wisconsin	Eric Hurley	State Resource Conservationist, Resources
USDA Natural Resources Conservation Service West National Technology Support Center	Adam Chambers	Environmental Markets Leader
Polk County Public Works	John Swanson	Watershed Management Authority Coordinator
Practical Farmers of Iowa	Grace Yi	Habitat Viability Coordinator
Sand County Foundation	Bartlett Duran	Director - WQ Partnerships
Sand County Foundation	Tricia Verville	Director of Ag Systems

Texas A&M University	Dara Wald	Associate Professor
The Land Institute	Tessa Peters	Director of Crop Stewardship
The Land Institute	Tammy Kimbler	Director of Communications
The Nature Conservancy	Rich Biske	Resilient Waters Program Director
U.S. Environmental Protection Agency	Elisabeth Lang	ORISE Fellow
U.S. Environmental Protection Agency, Office of Wetlands, Oceans and Watersheds	Whitney King	Project officer/technical expertise for USEPA Grant
U.S. Environmental Protection Agency, Region 5	Janette Marsh*	Nonpoint Source Technical Program Manager States and Tribes
U.S. Environmental Protection Agency, Region 7	Steve Schaff*	Senior Water Policy Advisor
U.S. Fish and Wildlife Service, Region 3	Heidi Keuler	Fish Habitat Biologist, Fishers and Farmers Partnership
U.S. Geological Survey	Owen McKenna	Visiting Scientist
Upper Mississippi River Basin Association	Kirsten Wallace	Executive Director
Upper Mississippi River Basin Association	Lauren Salvato	Policy and Programs Director
Upper Mississippi River Basin Association	Erin Spry	Project Specialist
University of Illinois Extension	Rachel Curry	Watershed Outreach Associate
University of Wisconsin Madison, Division of Extension	Guolong Liang	Agriculture Water Quality Specialist
Washington University in St. Louis	Dr. Abigail Aderonmu-Omunu	Postdoctoral Researcher
Wisconsin Department of Agriculture Trade and Consumer Protection	Coreen Fallat*	Agency Liaison, Bureau of Land and Water Resources
Wisconsin Land and Water	Christina Anderson	Program Manager

\*Planning committee member