



Photo by Johannes Plenio

RECOMMENDATIONS ROADMAP

Land Stewardship in Southeast Michigan

SEPTEMBER 2020

Table of Contents

- Table of Contents..... 2
- Acknowledgements 4
- Introduction..... 5
- Existing Programs Expansion 6
 - Recommendations for Action..... 7
- Overview of Potential Mechanisms..... 7
- Risk Mitigation 10
 - Overview 10
 - Program Framework 11
 - Stakeholder Insights 12
 - Recommendations for Action..... 12
- Land Tenure..... 13
 - Conservation Leasing 13
 - Land Valuation and Soil Health 14
 - Stakeholder Insights 16
 - Recommendations for Action..... 16
- Ecosystem Service Markets 17
 - Overview 17
 - Agricultural GHG Offset Programs 17
 - Water Quality Trading 17
 - Wisconsin’s Water Quality Trading Program 18
 - Pay for Performance (PfP) 18
 - Stakeholder Insights 18
 - Recommendations for Action..... 19
- Financing & investment..... 19
 - Overview 19
 - Financing Transitions 19
 - Low Interest Operating Loans 20
 - Aggie Bonds 21
 - Investment in Land..... 21

Iroquois Valley Farms REIT	21
Farmland LP	21
Agrarian Trust.....	22
Stakeholder Insights	22
Recommendations for Action.....	22
Conclusion	23
References.....	24

Acknowledgements

We acknowledge the collaboration and contributions from our partners in developing and reviewing this guide:

Jeremiah Asher - Michigan State University, Institute for Water Research
Airin Beechler - Lenawee County Conservation District (MAEAP)
Tricia Blicharski - Friends of the Detroit River
Alyssa Blonde - Hillsdale County Conservation District
Mary Bohling - Friends of the Detroit River
Brooke Bollwahn - Lenawee County Conservation District
Erez Brandvain - Washtenaw County Conservation District
Elaine Brown - Michigan Association of Conservation Districts
Bob Burns - Friends of the Detroit River
Megan DeLeeuw - Washtenaw County Conservation District
Matthew Gammans – Michigan State University
Ken Gibbons - Great Lakes Sediment & Nutrient Reduction Program
Katie Goplerud-Smith - River Raisin Watershed Council
Sam Lovall - Friends of the Detroit River
Steve May - River Raisin Watershed Council
Gerry Miller - Michigan Association of Conservation Districts
Taylor Myatt - Monroe County Conservation District (MAEAP)
Keeley Pape - Lenawee County Conservation District (MAEAP)
Lori Phalen - Michigan Association of Conservation Districts
Marilyn Thelen - Michigan State University, Extensions
Kim Wieber – Michigan National Resources Conservation Service (NRCS)
Nicole Zacharda - Great Lakes Sediment & Nutrient Reduction Program
Tom Zimnicki - Michigan Environmental Council

Introduction

With support from the Fred A. and Barbara M. Erb Family Foundation, Delta Institute has completed an assessment of potential mechanisms to increase adoption of conservation practices in Southeast Michigan that increase the sustainability of agricultural operations and improve water quality. Specifically, the project team investigated the applicability and feasibility of the mechanisms described below for implementation in Hillsdale, Lenawee, Monroe, and Washtenaw counties. Additionally, the assessment highlights successful case studies of similarly structured programs in Midwest states and describes their basic programmatic frameworks to illustrate how the various mechanisms might be implemented in Southeast Michigan. The findings of Delta Institute's assessment are presented in this document.

The assessment detailed in this document was informed by Delta Institute's previous evaluation of the current conditions exhibited in the target counties which summarized data on producer demographics, land use, cropping area, tenure status, conservation practices, and conservation program participation and outcomes. It was also largely informed by structured conversations with 23 local stakeholders including the leaders and staff of conservation districts, watershed councils, interstate commissions, and other conservation groups active in the target counties. These conversations were facilitated by the Delta Institute project team and used both one-on-one and small group discussions to drive thoughtful explorations of the potential mechanisms described herein. These conversations uncovered the local dynamics that impact conservation practices today and those that would impact the future implementation of any approaches featured in this assessment.

Ultimately, this assessment recommends a set of specific actions to implement the various mechanisms described in this document. These recommendations were developed in large part by considering the implications of the current conditions assessment and the insight shared by stakeholders. Delta will consider feasibility and potential impact of the proposed recommendations and focus on developing further a subset of interventions discussed below in the future.

Existing Programs Expansion

Southeast Michigan has been prioritized for funding through federal conservation programs due to its hydrological connection to the Western Lake Erie Basin and associated water quality issues. This has allowed county conservation districts and local NRCS offices to provide more technical assistance and fund implementation of conservation practices. This has also led to development of numerous research and pilot projects, through funding allocated by the Great Lakes Restoration Initiative. One of the challenges that was voiced by stakeholders is that funding allocation levels remain woefully low and serve only a small fraction of the producers. For example, less than 10% of all producers in the four counties enrolled in the Conservation Reserve Program (CRP). An additional challenge in enrolling more producers in conservation programs is the transient nature of pilot projects that have been prevalent in the area. This results in low uptake and high administrative costs required to continuously spin up program infrastructure. Third, a challenge that was cited (and not unique to Michigan) is the administrative burden for farmers themselves as the application process tends to be difficult to navigate and slow.

The state and local conservation programs should be considered for expansion where federal programs leave a gap. Michigan Agricultural Environmental Assurance Program (MAEAP) is a voluntary program administered by Michigan Department of Agriculture and Rural Development (MDARD) designed to reduce agricultural producers' legal and environmental risks. It aims to teach effective land stewardship practices that comply with state and federal regulations and demonstrates to producers how to identify and prevent agricultural pollution risks on their farms. Based on program annual reports, MAEAP verified acreage falls below 1% of existing acreage. Yet, this is an established state program that many are likely familiar with.

In the spring of 2020, MAEAP achieved a milestone of 5,000 verifications statewide, 121 of which are in Monroe County. Monroe County also exceeded 100 verifications in 2019, which is within the top 20% of Michigan counties. Hillsdale County, where the MAEAP program is also popular, currently has two technicians supporting the program (most counties have only one). Due to existing program infrastructure, there is potential for integrating outreach and delivering new programmatic features into the MAEAP framework. As discussed in latter sections, for example, there are discussions among conservation district and MAEAP staff regarding the need to convey to landowners the long term financial and environmental benefits of practices that MAEAP encourages. Another mechanism where MAEAP can be leveraged is in the land valuation process.

Local programs such as Soil Testing to Reduce Agriculture's Nutrient Delivery (STRAND) in the Western Lake Erie Basin can be leveraged and used as a successful model for developing additional programming. STRAND offers cost-share to incentivize the exploration, and hopefully adoption, of new precision nutrient practices that improve both water quality and a farm's bottom line. The program is supported by an EPA Great Lakes Restoration Initiative (GLRI) grant secured by the MI Dept. of Ag and Rural Development (MDARD) in 2018. The three-year grant is designated for

nonpoint source nutrient reduction to achieve goals outlined in the Michigan Domestic Action Plan. According to the 2019 Annual Report, 50 farms throughout Monroe, Lenawee, and Washtenaw counties have been awarded financial assistance through STRAND. STRAND focuses on addressing the need for more advanced technological tools to improve management, which was indicated by stakeholders to be a need. Conservation District staff expressed excitement for the STRAND project, and given its timeline, there might be an opportunity to secure additional funding to develop a program based on the project.

Recommendations for Action

- NGOs, conservation districts, and MDARD should conduct an educational campaign for MAEAP program participants and/or landowners about benefits of conservation practices through MAEAP such as provide engaging, clear, concise materials to be shared through the program. Broaden program promotion overall to increase participation.
 - Leverage impact and momentum of farmer-led groups in the River Raisin watershed and elsewhere to share resources and gather input from active farmers.
 - Consider outreach to farmer groups such as beginner farmers, the Amish community, women, and people of color.
- NGOs and MSU should assess whether MAEAP certification provides a measurable signal in the land value market.
- Conservation districts should seek sustainable sources of funding to support the STRAND project beyond the current grant timeline.
 - Continue utilizing modeling software to accurately predict impact and prioritize outreach.
- State and federal agencies should increase funding for programs with a proven record of success and consider recurring payments for farmers to maintain practices annually (as opposed to limiting payments to first-time practices).
 - Leverage national attention and concern for the Western Lake Erie Basin to bring impactful funding levels to Southeast Michigan.

Overview of Potential Mechanisms

While there are numerous strategies to expand and enhance existing conservation programs in Southeast Michigan. There are also several market-oriented mechanisms that can be implemented to help to realign the public and private benefits from Michigan agriculture and reduce negative impacts on water quality and other environmental outcomes. Based on research, stakeholder interview, and program review, Delta Institute believes each of the example programs or initiatives described in this section is applicable in Southeast Michigan, though some mechanisms may require more support and infrastructure before implementation (Table 1). Specific programmatic examples are drawn from across risk mitigation, land valuation and leasing, ecosystem service marketplaces, and supporting innovators with alternative financing and investment models. While

each of these interventions could be piloted and scaled independently, there are synergistic opportunities between many of the programs that could be leveraged for greater ecosystem improvements. The programs highlighted below are designed for a range of stakeholders including agricultural professionals, researchers, capital markets, investors, states and municipalities, and producers. There is always an interplay between policy and market drivers in a globally connected marketplace, and the content here is focused on innovative approaches that could have a measurable impact on Michigan nutrient loss.

Table 1. Summary of mechanisms that could be explored to incentivize transition to regenerative agriculture.

Mechanism	Stakeholders	Scale	Feasibility	Barriers	Next steps
Risk mitigation – insurance premium reductions	Conservation districts, insurance providers, state agencies, federal agencies (RMA)	Field scale to statewide programs/policies	Piloting	Lack of sustainable funding	Stakeholder engagement, program design, advocacy for funding allocation
Land tenure - conservation leasing	MSU Extension, conservation districts, landowners, producers	Field scale to statewide programs/policies	Piloting	Increased complexity, identification of partners	Identification and outreach to landowners, deployment of template lease agreements
Land tenure - land valuation	Producers, appraisers, lenders, farm managers, researchers	Field scale to statewide programs/policies	Conceptual	Lack of explicit connection between soil health and land value; unanticipated negative outcomes ¹	Research into soil health/land valuation connection and design of pilot framework; stakeholder engagement

¹ Increased property taxes associated with increased value are an unanticipated negative outcome, which can serve as a disincentive for some practitioners.

Ecosystem services - credit trading	Producers, Conservation districts, mandated and/or voluntary markets	Field to watershed scale	Piloting/implementing	High administrative burden	Benchmarking; stakeholder engagement
Ecosystem services - pay for performance	Producers, Conservation districts, state agencies, federal agencies	Field to watershed scale	Scaling	High frequency & resolution data needed; Lack of numeric nutrient standards; lack of applicable soil carbon protocols; lack of sustainable funding	Network of real time in-field and stream monitoring stations; Establishment of nutrient water quality standards
Financing	Lenders, producers	Field to statewide program	Conceptual/piloting	Unfamiliarity with approach; lack of existing programs	Stakeholder engagement; financial partner identification
Investment	Investors, producers	Field	Piloting/implementing	Unfamiliarity with approach; lack of existing programs	Stakeholder engagement, financial partner identification; establish investment opportunity in region

Risk Mitigation

Overview

Crop insurance is an integral part of the farm safety net as it provides protection for farmers when adverse weather impacts crop yields. Planting cover crops as part of regular cropping cycles can mitigate the risk posed by yield variation. When cover crops are integrated into cropping practices, overall soil health and function is improved, and cropland is made more resilient and less susceptible to variation year to year. This effect can translate to fewer insurance claims filed by farmers and incentivizes the planting of cover crops as a conservation practice.

Illinois and Iowa have both established state-wide programs within the past three years that reward farmers with crop insurance premium rebates for planting cover crops each year. While Michigan does not yet have a similar program in place, the Farm Management Department at Michigan State University Extension offers crop insurance programming and can serve as an important source of data and local expertise as this approach is explored for implementation in Michigan.

In the 2017 USDA Census of Agriculture, just 5.7 percent of all cropland in Michigan was reported to be cover cropped. While state-wide cover crop usage is higher than in Illinois and Iowa, it's still a low portion of cropland utilizing the practice (Table 2). In Hillsdale, Lenawee, Monroe, and Washtenaw Counties, 10 percent of agricultural operations were reported as cover cropped. The higher application rate of cover crops in these four counties might be partially explained by heightened awareness and regulatory pressure to reduce the harmful impacts of nonpoint source pollution on local watersheds and the WLEB.

Table 2. Cover crops planted, acres and operations in selected Michigan counties (USDA Ag Census, 2017)

County	Cover crops planted (acres)	Cover crops planted (# of operations)
Hillsdale	13,829	125
Lenawee	18,596	166
Monroe	5,750	92
Washtenaw	4,937	118

Program Framework

For a risk mitigation program like this to be developed, a Memorandum of Understanding would need to be established between the State of Michigan and the USDA's Risk Management Agency (RMA) to authorize such a program. This is because the RMA has agreements in place with individual Approved Insurance Providers (AIP) in Michigan that offer insurance services to farmers. These AIPs would then need to opt into the program to offer enrollment to clients. To support the program, the State would need to disburse funds to the RMA that would be used to compensate participating AIPs for any insurance premium rebates issued to clients. Enrolled clients would see a discount on their insurance statements and would pay a lower premium.

General characteristics and parameters for each of the programs implemented in Illinois and Iowa are described in Table 3 on the next page.

Table 3. Cover crop insurance rebate program parameters implemented in Illinois and Iowa.

Parameter	Illinois - Fall Covers for Spring Savings	Iowa - Cover Crop Insurance Demonstration Project
Initial budget allocated	\$300,000	\$1M
Discount	\$5/ac	\$5/ac
Administrative costs	\$1/ac (goes to SWCDs)	-
Eligibility	Outside of other state/fed cost-share programs	Outside of other state/fed cost-share programs
Application info	Applicant contact info Farm, Tract, Common Land Unit (CLU) Field #s Acres of cover crops Legal Description of fields/acres Required info and field designations aligned to info reported via an individual's Federal "Report of Commodities" Form (FSA – 578) to be forwarded to RMA to process discount once verified	Farm, Tract, Common Land Unit (CLU) Acres of cover crops (available on FSA-578, report of commodities form)

Sign-up process	Dec-Jan, after seeding, until funding runs out, application form available online	Dec-Jan, after seeding, until funding runs out, application form available online
Acres enrolled	50,000 in year 1 (113,000 acres applied for)	200,000 in year 1, additional 100,000 in year 2

Stakeholder Insights

- MOUs between the RMA and states have been established previously in the case of both the Illinois and Iowa programs.
- Crop insurance is a risk mitigation tool that all farmers are frequently exposed to and therefore are knowledgeable of current practices and are generally trustworthy of providers.
- Crop insurance premium rebate programs are relatively simple and inexpensive to implement. However, stakeholders perceive the State as being reluctant to fund new programs like this.
- Conducting pilot or demonstration projects to evaluate programmatic elements is an effective approach to adaptively manage the program before full-scale rollout and inform realistic goal setting for enrollment upon launch e.g., increase cover crop acres by 10 percent.
- Building a coalition of stakeholders, including state-agency officials, to advocate for the creation of the program is critical to success.
 - Effective coalitions are led by individuals who are perceived as “honest brokers” for the merits of the program e.g., American Farmland Trust in Illinois.
- Funding for outreach materials and staff training should be provided to local Conservation Districts to promote program enrollment and facilitate participation.
- Targeting this type of program to priority watersheds is not feasible because it would be required that it be made available to all eligible clients and AIPs statewide.
- There are capacity constraints in local districts that negatively impact how applicable conservation practices are verified on participating operations.
- This type of program could be integrated into Farm Bill legislation in the future.

Recommendations for Action

It is recommended that outreach efforts are conducted to target:

- State-agency staff who are interested and supportive of exploring the program’s creation along with other trusted stakeholders and other “honest brokers” that can support advocacy efforts.
- Conservation district staff to explore program on-boarding and training priorities
- the state RMA director to establish an MOU authorizing the program; and,
- AIPs operating in Michigan to assess their interest in such a program.

Land Tenure

Research shows that land tenure influences conservation practice adoption. Some studies suggest that those that have long-term access to land (landowners or long-term tenants) are more likely to adopt conservation practices, particularly those that require several years to observe notable benefits. As such, agreements between landowners and tenants can play an important role in driving conservation. Similarly, there is a need to have mechanisms designed specifically for landowners to create incentives for conservation. Linking soil health to land value can create motivation to adopt conservation on their land.

In Michigan land ownership rates are high, compared to neighboring Midwestern states, so leasing will be less of a lever than in states such as Illinois or Iowa. However, 30-40 percent of operations are managed by tenants or part owners. Table 4 (below) summarizes land tenure in the state and in counties of focus for this project.

Table 4. Land tenure in Michigan and 4 counties of interest for this project (Hillsdale, Lenawee, Monroe, and Washtenaw).

Year	% of operations w/ FULL OWNER state-wide	% of operations w/ FULL OWNER (# ops) 4 counties	% of operations w/ PART OWNER 4 counties	% of operations w/ TENANT 4 counties
1997	62.53%	60.57% (3266)	32.14%	7.29%
2002	69.57%	68.04% (3717)	26.41%	5.55%
2007	70.18%	70.13% (4053)	25.64%	4.22%
2012	67.51%	67.57% (3735)	27.08%	5.35%
2017	67.61%	64.64% (3165)	29.78%	5.58%

Conservation Leasing

Lease agreement provisions are a mechanism that can be used to incentivize conservation through a variety of pathways. Such provisions could be used by private landowners as well as institutional landowners. Lease agreements between tenants and landowners, when based on conservation framework, could serve as an important tool to improve conservation outcomes. Figure 1 on page 14 summarizes the conservation lease framework.

Figure 1. Conservation leasing framework.



As a binding contract, the lease agreement is the key instrument that land managers and owners can use to ensure that their land is managed in a certain way. Prior to drafting a lease agreement or considering changes to the lease, consider what barriers might exist that could prevent implementation of desired conservation focused provisions in the lease. There is a spectrum of options available to build a lease that incorporates conservation and regenerative agriculture principles. The lease can be tailored by selecting provisions that fit best the current situation. The provisions can cover the term of the lease, requirements for specific practices to be implemented, the payment structure, reporting, and removal of disincentives.²

Land Valuation and Soil Health

Michigan ranks 21st in terms of cropland value at \$4,480/ac according to 2020 USDA survey data. Currently, soil health is not explicitly linked to the land valuation process and therefore many landowners are not motivated to invest into agricultural practices that rebuild soil health and improve environmental outcomes. New approaches to land valuation can help to differentiate management systems and incentivize investment into conservation. Incorporating soil health and

² Considerations related to each provision type and legal templates can be found in the *Land Tenure and Conservation in Agriculture* report.

quality into the valuation process can serve as a critical pathway to transition to regenerative agriculture. However, currently, changes in soil quality due to management are not factored in land value, which means that landowners have no incentive to invest resources in practices that increase soil quality.

Although the drivers and motivations related to making land management decisions differ for landowners depending on demographics, ownership class, and several other cultural factors, all landowners care about the value of their land. However, a typical process for determining how much agricultural land is worth does not account for either soil health benefits, or the reduced expenses associated with different management systems. A typical farmland appraisal report might reference soil productivity as a static number and use it to estimate income from the land to determine its value. Most commonly, sales comparisons are used to determine the value of the property. This approach, while allowing the appraiser to make adjustments based on soil properties, location, and market trends, doesn't capture the increased value of the land resulting from alternative management (such as regenerative agriculture) since there may not be any properties like that qualifying for comparison.



Photo by Dylan de Jonge

Key players within the land valuation system represent the financial sector and professional trade organizations in the field of rural land management. National organizations such as American Society of Farm Managers and Rural Appraisers (AFSMRA) and the Appraisal Institute create guidelines for and certify appraisers. At the state level, the Michigan Society of Professional Farm Managers and Rural Appraisers offer resources and continuing education to its members. Michigan State University Extension conducts an annual survey and publishes reports on land values and lease rates across the state. Farm managers often also offer land brokerage services and conduct valuation as part helping a client sell a property. In addition, banks often conduct appraisals internally along with applications for operating loans.

There is an opportunity to amend, update, or develop new guidelines that give appraisers the technical ability and tools to integrate the connections more fully between underlying soil characteristics, management, and land value. AFSMRA offers continuing education credits, and a soil health focused curriculum could be developed for their membership. An example can be taken from the green building industry where the US Department of Energy convened an industry-wide working group that created an "appraisal toolkit" that helps appraisers integrate the

characteristics of green buildings into their appraisals. The same is needed for soil health focused agriculture.

With data and technology improving, valuation in appraisals can become a potential driver for increasing adoption of soil health practices by mainstream farmers. As consumer demand for sustainably produced food grows, rural appraisers need to be prepared to value soil health and/or associated practices properly for both sale valuation and loan and investment underwriting. There are three potential opportunities to link soil health to land value. They include improving data and methodologies in valuation indices to modify new appraisals, providing education to appraisers and underwriters to adopt new valuation approaches, and shifting the culture of appraisers, investors, and lenders to include long term benefits in underwriting as opposed to just focusing on market turnover and commodity prices in valuation.

Stakeholder Insights

- MSU Extension offers a range of farm management resources including leasing guides/templates, rate calculators, etc.
- MSU conducts an annual survey and analyzes land value trends, but currently does not assess differences in value as a function of management or soil health.
- Landowners represent a separate stakeholder group that may be difficult to reach and would require a concerted separate effort to engage.
- Primary motivation for landowners is likely maximizing financial return from leasing land.
- Monroe CD has invested time and effort to figure out how to articulate the value of conservation to landowners, possibly by leveraging the MAEAP program.
- Drainage improvements have been used as an adjustment to land value, but not conservation or soil health.
- Data gaps in understanding leasing/land tenure dynamics in the region.

Recommendations for Action

- MSU Extension: Offer additional resources on conservation leasing through existing platform, expand outreach activities to promote leasing resources.
- CDs/MAEAP program: Create materials for farmers to share with their landowners on MAEAP and benefits of land enrolled in MAEAP, assess whether MAEAP certification impacts rental rates, land value, or market trends.
- CDs: Conduct a systematic assessment of landowner/operator relationships and identify pathways to promote conservation leasing practices, deploy template lease agreements.
- MSU: Expand annual survey to assess soil health management impacts on rental rates and land values, conduct research to evaluate market drivers for soil health focused land valuation and intervention strategies.
- NGOs: Engage lending institutions, farm managers, and appraisers to establish a core stakeholder group to develop and implement strategies that incorporate soil health focused management into land valuation.

Ecosystem Service Markets

Overview

An alternative method of incentivizing conservation finance is by establishing market-based programs that distribute payments for the environmental outcomes and benefits that a practice generates. Frameworks include agricultural greenhouse gas (GHG) offset programs, water quality or other credit trading systems, and pay-for-performance funding programs. Each of these potential frameworks allows for incentivization and prioritization that can support efforts to increase soil health and carbon sequestration and improve water quality in Southeast Michigan.

Agricultural GHG Offset Programs

Voluntary GHG offset programs allow for landowners to monetize improvements to agricultural lands and practices that, when compared to a baseline, increase carbon sequestration, or reduce GHG emissions. The difference is captured in offset credits, which can then be sold to corporations or individuals looking to voluntarily (or in California, via mandate) offset emissions from their operations.

Several agricultural methodologies have been developed through registries including the Climate Action Reserve (CAR), American Carbon Registry (ACR), and Verified Carbon Standard (Verra).

Agricultural methodologies include:

- Soil Enrichment/Cropland protocols - available for practices that increase soils' capacity to store carbon dioxide as well as reduce nitrous oxide.
- Livestock protocols - primarily based on manure storage practices such as installation of anaerobic digesters and feeding strategies management.
- Fertilizer protocols - related to farm nutrient management including fertilizer application rates, fertilizer types (manure, synthetic, lime, etc.).

Private sector companies like BlueSource provide assessment and program administration services for landowners for a fee, or a percentage of credit sale profits. In order to be profitable as a credit generation project, the land area and practice impact must be large enough to offset these costs and administrative burdens.

Water Quality Trading

Like GHG or carbon offset programs, water quality trading programs have been established to allow for point source pollutant generators to offset their loading by funding reduction of equal or greater value elsewhere for less cost. As with GHG offset credits, a neutral registry or clearinghouse is required to establish approved methodologies and verify watershed pollution reductions. Currently, a program that stacks GHG credits and water quality credits together is being developed by the Ecosystem Services Marketplace Consortium.

Wisconsin's Water Quality Trading Program:

The State of Wisconsin recently passed legislation that will allow for establishment of a central clearinghouse for water quality credit trading. The state Department of Natural Resources, in partnership with the Department of Administration, will request proposals for a third-party clearinghouse operator to manage credit trading for the state. A water quality trading program was piloted in Michigan, in the Kalamazoo River watershed. This approach can be revisited and applied in Southeast Michigan with identification of buyers, sellers, and a neutral third party to act as clearinghouse.

Pay for Performance

Pay for performance (PfP) programs distribute funding available for implementing conservation practices based on modeled estimates of sediment or nutrient runoff prevented by specific practices. This funding model has been piloted by the MSU Institute of Water Research (IWR), funded by the GLRI, in the River Raisin Watershed. The program focused on reducing phosphorus from leaving agricultural fields and entering the Western Lake Erie Basin. Using GLWMS software, MSU IWR staff targeted priority fields and partnered with MAEAP technicians, conservation districts, and other local partners to conduct outreach and training for program participation and conservation practice implementation.

Additionally, PfP pilot programs have been supported by the EPA's GLRI program in watersheds across Michigan including Saginaw Bay, Rabbit River, and Kalamazoo River.

Stakeholder Insights

- Local conservation districts and watershed councils in Southeast Michigan were not aware of any current efforts to develop agricultural GHG offset programs in the area.
- There is concern about finding a land parcel (without aggregation) large enough to make a credit generation project worthwhile.
- Feasibility and profitability would need to be assessed before undertaking the administrative time and costs associated with developing a GHG offset program.
- The MSU Institute of Water Research has piloted a PfP program in the River Raisin watershed, which distributes payments based on estimated pounds of phosphorus runoff reduced.
- Farmers and producers interested in programs like PfP tend to self-select, which may leave out producers that have potential for greater impact.
- Culturally, climate change, greenhouse gas emissions reduction, and carbon sequestration are not compelling arguments for some landowners in the region.
- Programs that are locally managed and administered are more likely to attract producers who may be hesitant to trust statewide or federal programs.

Recommendations for Action

- State and federal agencies: Maintain funding for PfP programs, including establishing modeling systems to accurately predict high impact areas for outreach prioritization.
- State and local government: Establish numeric water quality standards for nutrients and/or GHG reduction goals to benchmark performance, verify credits, and drive implementation.
- CDs: Target outreach for program participation to high impact areas to avoid self-selection of producers and prevent maximum nutrient loading avoidance per acre.

Financing & investment

Overview

Identification of mechanisms, instruments, and approaches which appropriately structure capital can be used to support the adoption of conservation practices, producing a host of public and private benefits. These could include a combination of public and private funds, deployed using existing and novel mechanisms that more fully account for the long-term provision of ecosystem services. An additional factor in assessing the feasibility of alternative financing will be based on their alignment with the location of nutrient loading hotspots within the watershed. Designating priority areas where nutrient loss is more severe should help direct resources to maximize impact and is beneficial for new and existing programs.

While this mechanism has been met with enthusiasm, there have been limited conversations and piloting to explore its potential in Southeast Michigan. Further conversations, particularly those that engage farmers, may allow it to become a viable means of supporting farmers to reach their conservation goals.

Financing Transitions

One reason for the slow adoption to soil health-focused practices in agriculture is the lack of public and private technical and financial resources available to farmers, including financial tools that fit their specialized needs. The financial instruments that are currently available do not align with the needs of farmers who are breaking out of unprofitable and unsustainable management systems and are interested in ways to boost profitability while also improving the resilience of their operation. Currently, banks do not have the necessary credit models that incorporate soils and other biophysical risk ratings that are linked to the financial performance of the farms.

In the case of providing capital for farmers adopting soil health-focused practices, there are three challenges:

- The transition to improving the soil and introducing the benefits of improved soil health takes several years, which is challenging to incorporate into the current structure of annual operating loans;

- The upfront costs of the transition, including new equipment, cover crop seed, and the time needed to understand and integrate these new practices into farming operations aren't recoupable until soil health is improved; and,
- Farmers (and their bankers) are risk averse, and the provision of financial support and security during the transition is crucial. If farmers must carry the risks of making these changes while receiving the benefits later, then it is understandable why adoption of these management practices and systems have been slow.

A new set of soil health-focused financial products that better meet the medium-term capital needs of farmers adopting production practices that rebuild soil capacity is needed. The innovation lies in designing financial products that will focus on the assurance of profitability during the transition period and the repayment schedule, which will be aligned with the benefits delivered from improved soil health. To develop such products, the strategy would start with research and analysis of the fundamental relationships between healthy soil and financial risk. Currently, the metrics used for farm financial underwriting do not explicitly incorporate farm management and its effects on soil health and resiliency into risk ratings and credit models.

These novel products and mechanisms will likely modify traditional interest rates and return expectations, timing of the deployment and return of capital, and other such measures that better align capital flows with the farm's increasing resilience as soil is regenerated. To pilot this, partners



would need private capital, though available public support from USDA-NRCS programs (e.g. EQIP, CSP) can be leveraged. Financial institutions (such as Growers Edge Financial) could provide bridge financing for the upfront costs of the practices, with reimbursement from USDA. There are several of these bridge loan programs in operation across the US that could be replicated in Southeast Michigan. It is assumed that the farmer would also take out standard crop insurance to cover non-soil health related disasters.

Low Interest Operating Loans:

States across the Midwest have created programs that offer low interest bridge loans to support farming businesses. Michigan currently does not have a similar program. Since 1983, Illinois Ag Invest, operated through the Treasurer's Office, has provided loan opportunities for Illinois farmers. The Treasurer's Office partners with approved financial institutions to provide qualified farmers, agri-business and agriculture professionals below-market rate loans to start, expand or add value to their farm operations. The loans provided by the financial institution can be used for the purchase of farm equipment, purchase of land, construction-related expenses, and provide

operating lines of credit or other costs related to conventional or sustainable farming. Since the program began, Ag Invest has loaned more than \$4 billion in annual and long-term loans. This program can be used as a model for development and adaptation in Michigan.

Aggie Bonds:

A growing number of states offer loan programs to assist beginning farmers and ranchers with eligible purchases of farmland, equipment, buildings, and livestock. One cost-effective way for states to help beginning farmers is through the creation of “Aggie Bond” programs. Aggie Bonds are established through a federal-state partnership that allows private lenders to receive federal and/or state tax-exempt interest on loans made to beginning farmers. This is a cost-effective way to pass savings on to farmers by offering loans with below market interest rates. Generally, local lenders issuing Aggie Bonds can offer eligible beginning farmers rates that on average are one to three percent lower than the commercial farm loan rate. Michigan does not currently have an Aggie Bond program and could explore this as an option for supporting beginning farmers in the future.

Investment in Land

Investment opportunities are growing within the agricultural sphere, with food and agriculture as one of the main priority areas of impact investors. While many of these efforts are focused on areas abroad, potential domestic investable strategies for sustainable and regenerative agriculture are valued at \$321 billion and \$47 billion respectively. This potential encompasses a variety of asset classes with mechanisms at various stages of development. Current operations that may be replicable and inform implementation in Southeast Michigan include Iroquois Valley Farms REIT, Farmland LP, and Agrarian Trust.

Iroquois Valley Farms REIT:

Iroquois Valley Farms (IVF) is a real estate investment trust (REIT), a company that owns and/or finances income-producing real estate, specifically farmland. IVF invests in agricultural land that farmers commit to transition to certified organic production. IVF is a Certified B Corporation committed to providing farmland access for the next generation of organic farmers. The company purchases conventional farmland and leases it to tenants to transition to certified organic production with terms that are designed to support the organic transition. The lease terms are for nine years and are set up to help farmers to eventually purchase the land. IVF also helps finance land purchases for farmers in states where corporate farm laws prevent them from buying and leasing the land. The company began in 2007 by purchasing farms in Illinois. Currently, the company has 60 farms in 15 states, impacting over 13,000 acres. Four of the farms are in Michigan, though none are in the four southeastern counties of focus.

Farmland LP:

Farmland LP is an investment fund that generates returns by converting conventional commercial farmland to sustainable management. Founded in 2009, they manage over 15,000 acres and more

than \$160 million in assets in California, Oregon, and Washington. Farmland LP has stringent rules regarding how the land should be managed and manages a portion of their land holdings internally. Although operating in a different region of the United States, Farmland LP is like Iroquois Valley Farms in adopting the model that investing into soil health and regenerative agriculture is expected to generate financial and ecological returns.

Agrarian Trust:

To overcome the barrier of land access for beginning farmers, another model, based on a “commons” approach, has been developed by the Agrarian Trust, an organization that buys farmland and leases it at affordable rates to new or low-income farmers. Agrarian Trust sets up long-term leases with farmers that require organic farming practices, maintain affordability for future farmers, and ensure that ecosystems are protected.

Agrarian Trust raises capital to purchase land, they also rely on donations or discounted sales. Charitable sales or donations of land to Agrarian Trust, which is a 501(c)(3) nonprofit corporation, can also provide landowners with significant tax benefits.

The Agrarian Commons are set up locally to hold land in community-centered entities that are 501(c)(2) subsidiaries of the national 501(c)(3) Agrarian Trust. All decision making within an Agrarian Commons takes place in the local governance structure. The Agrarian Commons is a land-holding model with an aim to support and build a just, resilient, healthy food system and farm economy for the communities it serves. Each Agrarian Commons is supported in various ways by the national Agrarian Trust and there are currently ten Agrarian Commons across the US.

Stakeholder Insights

- Enthusiasm among stakeholders for possibilities using these types of tools, despite limited discussion and familiarity with financing and investment.
- Opportunity to keep work more locally focused, including opportunities with local impact investing work.
- Stakeholders seem hesitant on the potential for public financing, creating opportunities for private investment.
- Opportunity to engage more local stakeholders and financial operations in the agricultural sector.

Recommendations for Action

- Conservation districts and MSU should engage farmers in conversations about these tools, including organizations that support new farmers.
- NGOs should identify potential financial stakeholders that can pilot projects.

Conclusion

Through evaluation of the current data and conditions and structured conversations with local stakeholders in Hillsdale, Lenawee, Monroe and Washtenaw counties, Delta Institute has found both promising work and significant potential for new programs and mechanisms to increase the adoption of conservation practices.

In addition to leveraging and building on existing programs, we have explored a few novel market-driven interventions including risk mitigation, ecosystem service markets, investment, and land tenure, and proposed recommendations to advance these interventions. These interventions operate at different scales, involve different groups of stakeholders and are at different stages of development; all will require partnerships and collaboration to establish further.

Due to the current trends in CRP and incentive program adoption, the administrative burden and misalignment between supply and demand in ecosystem credit markets, Delta considers that the greatest opportunity for increasing adoption of conservation programs lies in creating a driver that integrates soil health into land valuation. Due to the large number of owner-operators in this geography, this mechanism has a greater potential impact than looking at conservation-based leases. Additionally, the widespread name recognition and familiarity of the MEAEP program and local partnerships should be leveraged in this work. In conclusion, positive impacts on farm finances and expanded availability of investment mechanisms could be realized by incorporating soil health into land valuation practices.

References

Accelerating conservation adoption in the River Raisin. Retrieved from <https://raisinconservation.weebly.com/>

Agrarian Trust. Agrarian commons. Retrieved from <https://agrariantrust.org/agrariancommons/>

Agrarian Trust. Retrieved from <https://agrariantrust.org/>

American Carbon Registry. Standards & Methodologies. Retrieved from <https://americancarbonregistry.org/carbon-accounting/standards-methodologies>

American Society of Farm Managers & Rural Appraisers: Michigan Chapter. Retrieved from <https://www.asfmra.org/michigan/home>

Bigelow, D., Borchers, A. & Hubbs, T. US farmland ownership, tenure, and transfer. (2016).

Bluesource. Carbon offset project development. Retrieved from <http://www.bluesource.com/services/carbon-offset-project-development/>

Carolan, M. S., Mayerfeld, D., Bell, M. M. & Exner, R. Rented Land: Barriers to Sustainable Agriculture. *J. Soil Water Conserv.* 59, (2004).

Clean Water Iowa. 2019. Cover crop insurance demonstration project. Retrieved from <https://www.cleanwateriowa.org/covercroptdemo>

Climate Action Reserve. Soil enrichment protocol. Retrieved from <https://www.climateactionreserve.org/how/protocols/soil-enrichment/>

Council of Development Finance Agencies. CDFA spotlight: Aggie bonds. Retrieved from <https://www.cdfa.net/cdfa/cdfaweb.nsf/0/3515CC91CAB651C1882579360059F5E7>

Delta Institute. 2019. Land tenure and conservation in agriculture: Creating incentives for landowners. Retrieved from <https://delta-institute.org/publication/land-tenure-and-conservation-in-agriculture/>

Electris, C. et al. 2019. Soil wealth: Investing in regenerative agriculture across asset classes.

Retrieved from <http://croataninstitute.org/images/publications/soil-wealth-2019.pdf>

Farmland LP. Retrieved from <https://www.farmlandlp.com/>

Fraser, E. Land tenure and agricultural management: Soil conservation on rented and owned fields in southwest British Columbia. *Agricultural and Human Values* 21, 73–79 (2004).

Frerichs, M.W. Ag Invest. Retrieved from https://illinoistreasurer.gov/Invest_in_Illinois/Ag_Invest

Hamilton, A. V., Mortensen, D. A. & Allen, M. K. The state of the cover crop nation and how to set realistic future goals for the popular conservation practice. *J. Soil Water Conserv.* 72, 111A–115A (2017)

Illinois Department of Agriculture. 2020. Fall covers for spring savings: Cover crop premium discount program. Retrieved from <https://www2.illinois.gov/sites/agr/Resources/LandWater/Pages/Cover-Crops-Premium-Discount-Program.aspx>

Illinois Department of Agriculture. Cover crop premium discount program. Retrieved from https://agr.state.il.us/blwr/FY20_CoverCrop/Fall%20Cover%20for%20Spring%20Savings%20Application.pdf

Iroquois Valley Farmland REIT. Retrieved from <https://iroquoisvalley.com/>

Janiec, C. Agri Investor. 2018. Agriculture draws most investors among impact sectors. Retrieved from <https://www.agriinvestor.com/agriculture-draws-investors-among-impact-sectors/>

Karthik Nadella, Brady Deaton, Chad Lawley, Alfons Weersink. Do farmers treat rented land differently than the land they own? A fixed effects model of farmer's decision to adopt conservation practices on owned and rented land. (2014).

Knowler, D. & Bradshaw, B. Farmers' adoption of conservation agriculture: A review and synthesis of recent research. *Food Policy* 32, 25–48 (2007).

Meredith J. Soule, Abeyayehu Tegene, and Keith D. Wiebe. Land Tenure and the Adoption of Conservation Practices. *American Journal of Agricultural Economics* 82, 993–1005 (2000).

Ranjan, P. et al. Understanding barriers and opportunities for adoption of conservation practices on rented farmland in the US. *Land use policy* 80, 214–223 (2019).

Sklenicka, P. et al. Owner or tenant: Who adopts better soil conservation practices? *Land use policy* 47, 253–261 (2015).

United States Department of Agriculture - National Agricultural Statistics Service, 2017 Census of Agriculture - County Level, Table 1. County Summary Highlights: 2017

United States Department of Agriculture. National Agricultural Statistics Service. Retrieved from <https://quickstats.nass.usda.gov/>

Varble, S., Secchi, S. & Druschke, C. G. An Examination of Growing Trends in Land Tenure and Conservation Practice Adoption: Results from a Farmer Survey in Iowa. *Environ. Manage.* 57, 318–330 (2016).

Verra. Verra standards and programs. Retrieved from <https://verra.org/verra-standards-and-programs/>

Wisconsin Department of Natural Resources. Wisconsin's water quality trading. Retrieved from <https://dnr.wisconsin.gov/topic/Wastewater/WaterQualityTrading.html>

Wolf, C. 2019 Land value & leasing rates. Michigan State University: TelFarm. Retrieved from <https://www.canr.msu.edu/resources/2019-land-value-leasing-rates>