

Understanding Barriers and Opportunities to Expanding Conservation Practice Adoption Among Farmers in Michigan



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Executive Summary

Fostering a larger network of conservation-minded farmers requires a better understanding of the factors and circumstances that drive farmers to adopt new and increasingly complex suites of conservation practices. With support from the Erb Family Foundation, our project team—consisting of Michigan Environmental Council, Michigan Agri-Business Association, Michigan Agriculture Advancement, Michigan State University, and National Wildlife Federation—held over 20 meetings across Michigan with farmers, agribusinesses, food system advocates, state agency personnel, academics, and other relevant stakeholders to develop a better understanding of the barriers and opportunities to expand conservation practice adoption in Michigan.

The conversations revealed the complexity of how agronomic decisions are made and the importance of policies, conservation programs, and state investments to drive a more robust conservation ethos among Michigan farmers. Farmers across Michigan consistently highlighted four primary challenges including: 1) short-term **conservation programs** at the state and federal level that are not conducive to fostering long-term use of conservation practices or more intensive/complex practices; 2) limited **markets** for new, diversified products and/or markets that place an appropriate monetary value on sustainable production and products; 3) a lack of **human capital**, including the knowledge, skills, curiosity, and confidence to overcome inherent challenges of implementing conservation practices; and, 4) inadequate **social networks** that support knowledge and resource sharing among innovative farmers.

Our goal was to develop a concise list of policy and economic development recommendations to encourage more farmers to adopt conservation practices, improve water quality outcomes, and ultimately improve Michiganders's access to locally produced products. The recommendations include:

1. Shifting from “short-term” to “long-term” financial and technical assistance programs for conservation adoption;
2. Restructuring conservation programs to an outcome-based vs. process-based model;
3. Connecting farmers and scientists for relevant research and outreach;
4. Bolstering economic development and state investments for innovative farmers; and
5. Building stronger connections between farmers, new purchasers, and consumers.

Background

Traditional agricultural policies and programs have focused on supporting the physical and financial capital of farms by building up infrastructure (equipment, drainage, irrigation) and promoting additional economies of scale (especially through production specialization). This system increasingly prioritizes specialization over diversification for crop farmers, leaves consolidation as the main path for business growth, and fails to adequately account for environmental and social externalities. Declines in public sector funding for basic and applied agricultural research, outreach, and technical support have impaired the ability of universities, Cooperative Extension, and conservation agencies to support Michigan farmers. At the same time, these organizations are under pressure to support and expand capabilities within this dominant narrative rather than explore or pursue alternative production systems. All combined, those who aspire to more complex and nuanced agricultural management systems encounter significant barriers, and these dynamics create serious short-, medium-, and long-term challenges for Michigan's agriculture sector and environment.

Since 2017 our project team has cultivated a network of innovative and conservation-minded farmers and agricultural professionals across the state who seek a more sustainable and economically profitable food system. With support from the Erb Family Foundation, our team expanded the network to a broader coalition of food system advocates and change agents. Under this project we explored policy, economic, and structural barriers that are inhibiting broader adoption of conservation practices across Michigan. These practices—variously described as “sustainable,” “soil health,” or “regenerative”—hinge on increasing soil cover, crop rotational diversity, and decreasing tillage to enhance the natural capital of the farm operation and reduce negative impacts on both on-farm and off-farm resources¹. Increasing diversity within Michigan farming landscapes, including through cover crops and extended rotations with a diverse range of crops, offers the potential to transform the state's agriculture to a more vibrant, resilient system that protects soil, air, and water quality across the state.

Adoption of these conservation practices is not without significant challenges, however. In our discussions with farmers and farm advisors, we confronted key barriers to adoption head-on through a series of facilitated discussions. What emerged was a picture of a complex and dynamic set of challenges at multiple scales. Farmers face a range of barriers at the farm scale, including the technical, agronomic, and economic

¹ There are many perspectives and definitions on the topic of farm stewardship, and terminology describing these concepts are complex and constantly evolving. We recognize that terms such as soil health, regenerative agriculture, and conservation agriculture have distinct traditions and definitions, yet also acknowledge the conceptual overlap between them. The goal of the paper was not to create new definitions or terminology but to explore overall sentiments and challenges related to agriculture and the environment. Throughout this paper, we primarily use the term “conservation practice”, as this terminology aligned most closely with that used by participants in this project.

challenges that previous conservation programs—at the state and federal level—have traditionally focused on. Exacerbating these very real challenges is a host of community-level constraints (such as local norms and acceptability of practices), market access and availability problems, climatic and environmental changes, and policies that pressure and influence farmers when it comes to making conservation decisions.



Image 1: Twin row planted malting barley, relay cropped with soybeans

These challenges fall into four broad themes: **conservation programs**, **markets**, **human capital**, and **social networks**. These themes are interconnected and difficult to disentangle.

Challenges and Barriers

Short-term Conservation Programs

While not all participants had direct experience with conservation programs, nearly all were familiar with them, including federal programs such as the Conservation Reserve Program (CRP) and the Environmental Quality Incentives Program (EQIP), as well as state programs, particularly the Michigan Agriculture Environmental Assurance Program (MAEAP).

Participants often commented on these programs' limitations, especially noting that they can be inflexible and bureaucratic, increasing the barrier to entry for farmers seeking support and limiting their usefulness for innovation. Cost-share programs such as EQIP incentivize fast adoption of complex practices over short time windows, which does not allow for adequate learning and may lead to a negative experience and view of conservation programs. Farmers and agricultural professionals across Michigan consistently lamented the current structuring of state and federal conservation programs. In general, these programs are designed to provide short-term (1-3 year) cost-share or technical assistance to implement a given practice. While these short-term programs may improve general familiarity and adoption of conservation practices,² historic trends on the use of cover crops and no-till—two of the most common and heavily promoted in-field conservation practices—suggest that these programs fail to deliver widespread use.³ This lack of permanency was noted by one farmer who referred to this phenomenon as “renting conservation,” in which government programs are not creating any lasting change on the ground. Several farmers commented that they believe these programs are inherently wasteful uses of taxpayer money. Farmers and agricultural professionals also noted that current conservation programs are often limited to “entry-level” conservation practices—a one species cover crop planting, reduced/no tillage, edge-of-field buffer strips, drainage water management—but are generally ill-equipped to address more complex conservation practices that require a larger transformation of management systems. As such, many farmers who are engaged in more complex conservation systems are often precluded from traditional cost-share assistance or crop insurance because the government and lenders view their operations as overly ‘risky’.

The farmers in our discussions who were most engaged in conservation efforts on their farms emphasized the critical role of learning and on-farm experimentation, which often extends beyond the 1-3-year contract periods offered through existing programs. Producers also commented on the process-focused orientation of existing programs, as they emphasize adoption of new conservation practices. These practices, if sustained over the long-term, are likely to have positive impacts on environmental outcomes and the producers we spoke with recognize the importance of this process-focus. At the same time, existing programs lack a focus on the environmental outcomes already achieved by leading producers through adoption of conservation practices over many years.

² Wallander, S., Smith, S., Bowman, M., and R. Claassen. 2021. Cover crop trends, programs, and practices in the United States. USDA Economic Research Service Bulletin No. 222.

³ Prokopy, L.S., Floress, K., Arbuckle, J.G., Church, S.P., Eanes, F., Gao, Y., Gramig, B.M., Ranjan, P., & Singh, A.S. 2019. Adoption of agricultural conservation practices in the United States: Evidence from 35 years of quantitative literature. *Journal of Soil and Water Conservation*, 74(5), 520-534.

Limited Markets

Michigan farmers stressed the need for diversification in many respects, but specifically crop diversification that enhances economic resiliency and soil health. Attaining sufficient soil health and water quality improvements is difficult within the confines of a corn and soybean rotation, which limits cover crop options and is largely dependent on external inputs of fertilizers, herbicides, pesticides, fuel to power mechanized equipment and other factors well beyond a farmer's control. Consolidation in key input and commodity markets narrows farmer choices in crops and management systems; locks producers into constrained markets; and reduces returns on more sustainable and intentional management. Crop quality was also a theme that emerged from innovative farmers. While management can impact the productivity of farms, at the end of the season "bad" managers and "good" managers get the same price per bushel of crops produced, even if the quality of grain is higher from the good manager. A heavy focus on commodity crop production therefore can lock farmers into a short-term, yield-focused mindset, rather than opening the door to a broader profitability and long-term viability mindset. Markets that value and incentivize crop quality, a diversity of products for human consumption, and environmental outcomes can play a critical role in promoting innovation.

Lack of Human Capital

Farmers are a diverse group of individuals with different values, attitudes, and goals that influence their decisions. Participants we spoke with indicated the importance of these mindset differences as a key determinant of whether a farmer is willing to adopt key conservation practices. While implementing cover crops or conservation tillage can be challenging and risky in certain climate or soil conditions, farmers with a willing mindset can often find ways to overcome these barriers through experimentation, innovation, and curiosity. In fact, many of the innovative farmers expressed *enjoying* the challenge and novelty of farming more complex systems.

Inadequate Social Networks

While research on farmer decision making and social networks emphasizes the importance of peer-to-peer connections in promoting and supporting conservation practices⁴, our discussions revealed some significant gaps in these networks across Michigan. In our participants' experiences, farmers often do not talk to each other locally, especially about innovative practices, which inhibits development of social norms around innovation/adaptation and slows information exchange. Tensions associated with land rental and perceived competition for this rental ground serve as significant inhibitors among local farmers. Where discussions do exist, they often reflect

⁴ Ranjan, P., Church, S. P., Floress, K., & Prokopy, L. S. (2019). Synthesizing Conservation Motivations and Barriers: What Have We Learned from Qualitative Studies of Farmers' Behaviors in the United States? *Society & Natural Resources*, 32(11), 1171-1199.

local social dynamics and stem from the efforts of a particular individual in facilitating discussions.

Addressing the Broad Needs of Farmers: Early Adopters vs. Resistant Producers

Our approach to addressing these issues is firmly rooted in understanding and applying psychological knowledge about changing individual attitudes and behaviors. The adoption trajectory of conservation practices follows a bell-shaped curve, with leading growers initially adopting practices, followed by a segment of early adopters before spreading through the majority of farmers. A key insight of this theoretical framework is that different segments of the farming population have different orientations toward new practices or technology, driven by a combination of personality, experiences, capacities, risk tolerance, and social influence. Practice promotion efforts that appeal to the primary motivations of Early Adopters are not likely to effectively reach Middle Adopters, leading to a significant barrier in expanding established conservation practices. Our work in policy, programming, and investments aims to reduce these barriers and enable extensive adoption of conservation practices and ultimately, improved water quality outcomes from agriculture.

The methods used for this project differ from other state and regional efforts by specifically focusing on the Innovators and Early Adopters who are developing solutions to achieve greater soil health and improved water quality. Many current conservation promotion efforts and programs focus on relaying technical information about practices and their environmental benefits to farmers, messages most likely to appeal to early adopters who are most likely to already be using these practices. This traditional outreach approach fails to expand the adoption of conservation practices by not messaging to middle adopters, yet also does not adequately support the efforts of innovator and early adopter farmers to continue to develop new conservation approaches needed to meet key stewardship goals. Supporting the efforts of these innovative farmers through better programs, policies, and investments is needed to demonstrate success of these new practices and leverage their experiences in conservation promotion efforts aimed at reaching middle adopters.

Our in-depth conversations and analysis of the current status of production systems and conservation efforts in Michigan highlight the need for additional investment to develop the necessary policy, economic investments, and social supports to drive conservation adoption forward. Many factors today create an environment conducive to enhanced stewardship investments in Michigan – from an increasing awareness of soil health and conservation strategies at the state and federal levels, to a focus on climate solutions led by agriculture, a desire from consumers for more locally and sustainably sourced foods, to a continuing focus on addressing water quality issues in the Western Lake Erie Basin – and beyond. The following summarizes our recommendations for policy, economic investments, and social supports to drive on-farm conservation forward in a

way that protects water quality, supports farmers, and improves Michiganders access to fresh, healthy food.

Outcomes and Recommendations

Create Longer-term Conservation Programs and Build Necessary Technical Support

Our Recommendations

1. Develop a technical-assistance and/or cost-share program that is structured to support conservation adoption over a 7-10-year timeframe. Based on conversations with innovative farmers and early adopters, extending the timeline is important for several reasons:
 - *Increased likelihood of maintaining permanent conservation practices.*
Extending the time frame of a cost-share program will require greater time and resource buy-in by farmers which may discourage farmers from abandoning a conservation practice – which is common in current conservation programs – at the end of the program given their investment.
 - *A longer program timeline better reflects the realities of ecological dynamics.*
Traditional programs cannot effectively demonstrate the value—overall economics, yield increases, soil retention, flood mitigation—of many practices in a 1-3-year window as many of these require years to return measurable improvements. Farmers recounted personal or anecdotal stories of neighbors writing off cover crops or no-till because they “didn’t see a difference in the soil” after one year of employing these practices. The extended program timeline provides a more realistic scenario to demonstrate the multi-faceted value of conservation practices.
 - *An extended program may allow the state to encourage more complex conservation practices (for example, interseeding, planting green, relay cropping).* The farmers we met with noted the potential volatility in the early years of trying these practices. A 7-10-year program gives more time for producers to work with technical service providers to troubleshoot this next tier of conservation planning. This program structure also provides new opportunities for researchers to better understand the technical, agronomic, and ecological aspects of these practices which builds their capacity to help other farmers.
2. Create five “conservation ag consultant” positions spread across the state to provide support to farmers who are implementing conservation and soil health focused production systems. The consultants fill a need for innovators and early adopters who express challenges in obtaining technical assistance within these

emerging systems. To be effective, these positions must attract and retain exceptionally qualified individuals at compensation levels that reflect their expertise. These positions could be housed in the Michigan Department of Agriculture and Rural Development (MDARD), Michigan State University (MSU) Extension, or Conservation Districts, but should be recognized as specifically focused on supporting Innovative and Early Adopter farmers of conservation farming systems.

3. Increase and maintain conservation district funding to meet the long-term needs of farmers and other land managers in Michigan. Sustained and increased funding will allow for more staffing at the district level, increased focus on watershed-level implementation and allow for development of relationships with local producers that are key in increasing and sustaining conservation adoption.



Image 2: Relay cropped soybeans into wheat

Improve Markets: Enhance Economic Development and State Investments

Our Recommendations

1. Focus on targeted value chain processing. increase the availability of support, including grants, loans, etc., for production or location-specific field crop handling, processing, and distribution in Michigan. There are nascent consumer markets for Michigan-based grain, bean, and other field crops but these products have handling, aggregation, processing, and distribution needs that are currently under-developed.

2. Fund “matchmaker” positions that link buyers and farmers in a particular region. Most farmers in our network have diversified their operations through cover crops and/or expanded rotations. Often these additional crops are not easily marketed, and farmers are generally uninterested or lack the necessary skills and time to market these products to consumers. Similarly, consumers or large bulk purchasers (food banks and institutions) may struggle to aggregate goods from multiple farmers or cultivate a relationship with new farmers.
3. Support substantial infrastructure investment in rural communities and the agricultural sector. Ensure federal investment in crumbling rural roads, bridges, waterways, railways, and limited high-speed internet access reach rural communities. Left unaddressed, the rural infrastructure crisis will hit small farmers and middle-tier farmers—and their communities—the hardest, further hampering their efforts to establish and grow new markets for their products.

Improve Markets: Connect Farmers with New Purchasers and End Consumers

Our team held several meetings with various buyers and aggregators across Michigan including food hubs, large retail and independent grocery stores, food banks, and institutional buyers (for example, K-12, colleges and universities) to better understand the opportunities to connect farmers with these buyers. Somewhat complementary to farmers’ hesitancy around finding new buyers, many of the buyers we spoke with discussed challenges associated with locating and aggregating large quantities of ‘new’ crops.^{5 6}

Our Recommendations

1. Add medium- and small-scale meat processing facilities. This is both a recognized need, and an expanding market opportunity following the COVID-19 emergency that laid bare animal protein supply chain challenges.
2. Expand access to and availability of regional cold storage and processing facilities.
3. Link institutional buyers with farm and commodity representatives to identify and reduce barriers for local use of Michigan-grown farm products. Small grain and

⁵ We should note that the Michigan State University Center for Regional Food Systems is already engaged in numerous, successful efforts to connect farmers with institutional buyers.

⁶ Because this series of conversations covered a wide range of institutions and purchasers, the following recommendations are not necessarily echoed by all buyers with whom we spoke. Instead, these recommendations provide a high-level synopsis from “buyers” as a whole.

legume crops, including dry beans, are a substantial opportunity for local and regional institutions (schools and universities, hospitals, and other food service settings) to meet demand for locally produced, nutritious food.

Invest in Quantifiable Outcomes

Conservation programs at federal and state levels have long operated with an approach that focuses on adoption of practices, assuming those management changes result in desired outcomes. This approach simplifies programs and streamlines efforts for staff, but it decouples the metrics used to track program success from actual environmental outcomes. At the same time, agricultural systems continue to fall behind on meeting stated water quality goals, such as those identified in Michigan's Domestic Action Plan for Lake Erie.

The Michigan Agriculture Environmental Assurance Program (MAEAP) has become the signature program of state agencies, conservation districts, MSU Extension, and industry groups to further environmental protection, including water quality. Like other programs, MAEAP promotes the adoption of best management practices rather than focusing on or measuring specific outcomes of management practices. The main row crop nutrient loss mitigation strategies promoted by the MAEAP program, including soil testing and adherence to university fertilizer recommendations, rely upon modeling data to determine water quality impacts rather than any on-the-ground monitoring.

Given the general familiarity with the program among farmers, our project team used MAEAP as a launching off point for discussions on the efficacy and utility of various conservation programs. In addition to noting the need for longer-term programs, several farmers commented on the need for MAEAP (and similar programs) to develop better outcome-based tracking methods, targeted investments, and expanded technical capacity regarding the conservation practices within the program.

Growers who are dedicated to conservation agriculture systems spoke of a desire to have the environmental outcomes of their farms recognized, not merely the fact that certain practices are in place. The focus on practices alone stifles creative strategies to address conservation goals and lacks site-specific nuances. If programs were agnostic as to the conservation **practices** and instead focused on—and compensated growers for—the actual environmental **outcomes** that were desired, growers would have the freedom and motivation to develop solutions for their own farms.

Our Recommendations

1. Prioritize and quantify outcomes in conservation programs rather than only incentivizing practices. Tailor implementation, to specific watershed needs and opportunities, and even specific fields to address nutrient losses.

2. Create a water quality focused program, outside of MAEAP, to pursue new approaches to addressing non-point source nutrient losses.
 - a. A stand-alone program must include robust tracking and outcome-based measurements. A focus on outcomes rather than practices ensures management practices evolve with improving science, provides motivation to growers to implement creative management solutions, and better aligns the program goals with environmental impacts.
3. Expand edge-of-field and in-stream monitoring capacity to better ascertain progress and the source of nutrient losses. Work on reducing the cost and complexity of monitoring efforts to expand scope.
4. Expand technical capacity of service providers, including those employed by conservation districts and MSU Extension, to meet the growing complexity of on-farm conservation and watershed planning. Increase salary and benefit packages to attract and retain knowledgeable staff.
5. Implement a soil health task force, led by MDARD, to build capacity and identify the most useful soil health practices for Michigan farms and lead outreach to farmers and agribusinesses.
6. Expand research investments to better understand the linkages between management practices and nutrient losses. Establish a fund like the Fertilizer Research Fund previously administered through MDARD to award a)
competitive research grants to improve outcome measurements, and better enable the tracking of water quality and soil health outcomes associated with various conservation practices and b) **competitive outreach grants** to engage with farmers and agricultural professionals to share and discuss timely information on the findings of the Research Fund projects.

Improve Social Networks: Connecting Farmers and Scientists for Research and Outreach

Practical and comprehensive research is needed to understand the production and environmental outcomes of complex conservation farming systems. While academic researchers remain one of the most trusted voices within the agricultural community, traditional, reductionist research is unsuitable for the more complex, sustainable systems farmers we spoke with are trying to build. We heard frustrations about the slow timeline of academic research and the perceived lack of relevancy of many cropping systems experiments as most trials are not conducted on farms and do not reflect the complexity of farming systems.

For research to be utilized by innovative farmers and truly drive improved environmental outcomes across Michigan, it needs to be: 1) credible: perceived as rigorous and

scientifically sound and aligned with core expertise; 2) salient: relevant to decisions and delivered at the time and in the formats that audiences/partners can use; and 3) legitimate: perceived as unbiased and fair.

This type of research comes when there is ongoing dialogue between researchers and stakeholders. There is a need for strengthening relationships and building networks between researchers and the agricultural community to facilitate stakeholder-driven science, better outreach, and co-learning through synthesis of results. In particular, engaged research and outreach needs to meet the needs of a broad and diverse array of producers with different goals and operational considerations. There is no one-size-fits-all approach that will work; rather, diverse research and outreach programming is needed to advance conservation efforts.

Our Recommendations

1. Increase research in three key areas:
 - Research on alternative production systems that advance conservation outcomes while contributing to diversified food systems;
 - Locally relevant, stakeholder-driven research on on-farm conservation practices and systems; and
 - Integrated food system-food supply chain research that connects on-farm practices with traditional supply chain economic research (systems-based research).
2. Focus on interactive dialogue between innovative farmers, agricultural professionals, and researchers. This will help farmers articulate what research would help them track the impacts of conservation agriculture on their farms and inform innovative management. It will also inform researchers on the challenges and issues faced by different types of farmers, helping them to design research that is credible, salient, and legitimate.
3. Support on-farm research to assess innovative cropping systems and conservation agriculture. There is value in farmers implementing research on their farms and partnering with researchers in this endeavor. These sites could serve as valuable places for innovative farmers to meet and deepen their networks.
4. Increase on-farm field days attended by local and state-level policymakers, researchers, and agency personnel. This would provide an opportunity to demonstrate what relevant research looks like, how farmers are innovating their systems, and gives an alternative vision for a vibrant agriculture in Michigan.



Image 3: Interseeded cover crop blend planted into corn

Methods

This effort built on work we conducted from 2017-2018 under a grant funded by the Michigan Department of Agriculture and Rural Development (MDARD). Through that project, we initiated conversations with row-crop farmers across Michigan to explore ways to support them and expand conservation agriculture in Michigan. Those conversations directly informed our highly participatory approach to this Erb Family Foundation-funded work, which mirrors a participatory action research methodology.⁷ At its core was a series of facilitated meetings with a range of stakeholders across the state. Stakeholders included those who farmed row-crop systems, advised on them, researched them, or created policies or programs around such systems. We also included food system specialists in many of the conversations to better understand the broader context around Michigan agriculture, and how these actors might help promote conservation agriculture. We tapped into our existing networks to identify Innovative and Early Adopter farmers, agricultural and conservation professionals, and researchers to invite to roundtable discussions and virtual sessions. At the end of sessions, we asked

⁷ Bergold, J. and S. Thomas. 2012. Participatory research methods: a methodological approach in motion. *Historical Social Research* 37(4): 191-222.

‘who else should be at the table for this conversation?’, giving us broader reach across the state.

Restrictions due to COVID-19 limited the extent to which we could meet in-person to achieve these goals, so we held the meetings virtually, conducted phone interviews, and offered online field days and winter meetings for farmers and agricultural professionals.

Key to building relationships and having honest discussions about Michigan agriculture was convening in small groups and using best practices for facilitating meetings on complex topics. This included using a semi-structured facilitation guide composed of open-ended questions, proposing ground rules for the conversation, actively listening to understand by taking notes, asking clarifying questions and encouraging participation from all. These meetings and phone interviews were structured and facilitated around the following key questions:

- In 20 years, what would a vibrant, more resilient agriculture look like in Michigan?
- What does society need to do to help your farm/your industry get there?
- What are the key leverage points that can be shifted to expand and enhance markets/policies? On farm adoption of resilient systems?
- What mechanisms would facilitate more collaboration and networking?

Between January 2020 and early 2021, our team used three main approaches to reach participants: 1) individual interviews with key stakeholders, typically between 2-8 people); 2) roundtable discussions among multiple participants; and 3) synthesis meetings to share what we had heard and gather additional feedback around findings and recommendations. The wider discussions usually included around 20 participants, with the synthesis meetings and a series of winter meetings with farmers ranging from 30-75 participants. Participants reflected a wide range of food systems stakeholders, including producers, farmer advisors, food procurement specialists, processors, food hub experts, researchers, and community organizers. In total, we held at least twenty meetings and conversations, mostly conducted virtually, including one in-person meeting in January 2020. While many of our meetings were focused on specific topics with targeted participation from individuals and organizations working in that arena, meetings with a broader focus drew participation from a wide range of professionals. We believe this repeated and diverse attendance reflects positively on our project team’s efforts and indicates progress toward establishing a cross-sector network.



Image 4: Double cropped sunflowers after barley

We had particularly strong engagement from farmers, with 30 individual producers attending at least one meeting. In addition, many of these producers attended a series of virtual meetings in early 2021 called *Underground Innovations*. This was the 3rd annual *Underground Innovations* conference. These virtual meetings were well-attended by a range of producers and other stakeholders, with an average attendance of about 60 across the three sessions.

We want to acknowledge the challenges in operating a meetings-based project during a time of significant disruptions caused by the COVID-19 pandemic. Virtual formats for meetings do have some benefits, including less travel expense and time commitment from the project team and participants. Virtual formats may also be more appealing to some individuals. On balance, however, we found these virtual formats to be limited in many important ways, including the ability to make strong personal connections and evaluate the relationship-building component of these types of engagement. While we were able to make the best of the situation by utilizing virtual conferencing technology, we anticipate that being able to safely meet in person will yield stronger relationships and deeper engagement from stakeholders.

In addition to our qualitative assessment of the impacts of our project efforts, we conducted a survey of participants in April 2021. The goal of this survey was to gauge participant perceptions of project meetings, changes in beliefs or behaviors following discussions, and perceptions about Michigan food systems and efforts to support transformational change. In particular, we wanted to assess any further discussion or thoughts spurred by project meetings as a means to understand cross-pollination of ideas beyond our project meetings. A major goal of this project was to connect well-positioned experts and organizations engaged in various aspects of food system reform to spur greater cross-sector communication and relationship building. These are challenging concepts to evaluate, but we believe that our survey results point to some positive outcomes resulting from our project efforts. Due to timing conflicts with seasonal farming activities (field preparation and planting), the survey response was limited, with 15 individual responses out of 70 invitations (21% response rate).

The survey results indicate that participants held positive opinions of project meetings, with 100% responding they had either positive or very positive impressions of the meetings in which they had participated. These quotes reflect some of the sentiments of participants about their experience with project activities:

“Very pleased to see the discussions become less siloed.”

“I was very impressed with the open discussions about conservation and the barriers that exist and how we can work to overcome such obstacles. Ideas were wide-reaching, but also actionable. There was understanding of both on-farm realities and current policy point, so the ideas drawn from the meeting were balanced and intuitive.”

“As a producer, it was comforting to know people were interested in our opinions and ideas and wanted to use them to inform future policy decisions.”

We also asked participants about their views of factors that either contribute to or inhibit conservation in Michigan agriculture. The responses indicate the need for future work to restructure policies, markets, and other efforts to address cross-scale challenges in Michigan agriculture. Nearly 85% of respondents agreed or strongly agreed that *“current government programs or policies are insufficient to address current food system challenges.”* A further 58% of respondents disagreed or strongly disagreed that *“Michigan food systems are currently diverse and robust enough to meet the needs of Michigan residents.”*

When asked how much interest they had in future efforts to build resilient food systems in Michigan, 58% of participants indicated “a great deal” of interest and 25% a “moderate amount,” reflecting continued enthusiasm for project efforts. Further highlighting this need for ongoing work in this area, 92% agreed that *“there is a need for greater collaboration and networking among stakeholders to support food system*

resilience.” These results highlight the importance of networking-based efforts to support systemic reforms to build resilience throughout Michigan’s food system.

Conclusion and Acknowledgements

There is tremendous opportunity to rethink and restructure conservation practice promotion efforts that provide environmental sustainability and food access for all Michiganders. Our team is encouraged by the dozens of farmers and food system professionals who engaged with us and expressed a desire to help improve adoption of conservation agriculture systems.

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