NATIONAL WILDLIFE FEDERATION

SOIL HEALTH IN MICHIGAN: INDENTIFYING NEW STRATEGIES THROUGH GROWER DIALOGUES

2025 IN PARTNERSHIP WITH

MICHIGAN Environmental Council

MAA MICHIGAN AGRICULTURE ADVANCEMENT

ALLIANCE for the GREAT LAKES

LISTENING SESSIONS REPORT

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INTRODUCTION

HEALTHY SOIL SYSTEMS are essential to vibrant and productive farms. Soil ecosystems encompass abiotic and biotic components, with a complex interplay of minerals, organic matter, nutrients, microbial communities, and invertebrates of a variety of sizes. Soil is not simply a blank medium in which crops grow. Plants, including crops grown by farmers, interact with complex soil ecosystems to derive nutrients, water, and other critical chemicals essential to growth. While soils have a range of productive abilities (which we can call soil quality), management decisions play a role in determining the relative health of soils to support sustained crop production through multiple years. Healthy soils also have increased ability to maintain structure and retain nutrients, resulting in less erosion and nutrient losses to waterways. By implementing approaches that cultivate healthy soil ecosystems, agricultural producers can positively influence both off-farm environmental quality and on-farm productive capacity.

Soil health approaches focus more on the interplay of multiple management practices rather than the individual practices themselves. There are multiple frameworks that lay out the core principles of soil health management, typically emphasizing between four and six elements. The framework used by the US Department of Agriculture (USDA) includes four primary principles: 1) minimize soil disturbance; 2) maximize soil cover; 3) maximize living roots; and 4) maximize biodiversity[i]. Other frameworks typically add in additional principles focused on integrating livestock with crop production[ii] and

emphasizing organically-derived inputs over synthetic inputs[iii]. Typical management practices to achieve these principles include reducing or eliminating tillage (e.g., no till production), increasing diversity in crop rotations (especially incorporating additional crops besides corn and soybeans), and utilizing cover crops between cash crop rotations to maintain living roots and maximize soil cover. Integrating livestock adds additional benefits of soil aeration from animals moving across fields, organic inputs from manure, and economic co-benefits from using cover crops as winter fodder[iv]. Beyond cover crops, diverse rotations, and reduced tillage (and integrated crop-livestock production), soil health systems often incorporate pest and nutrient management practices that minimize use of external inputs.

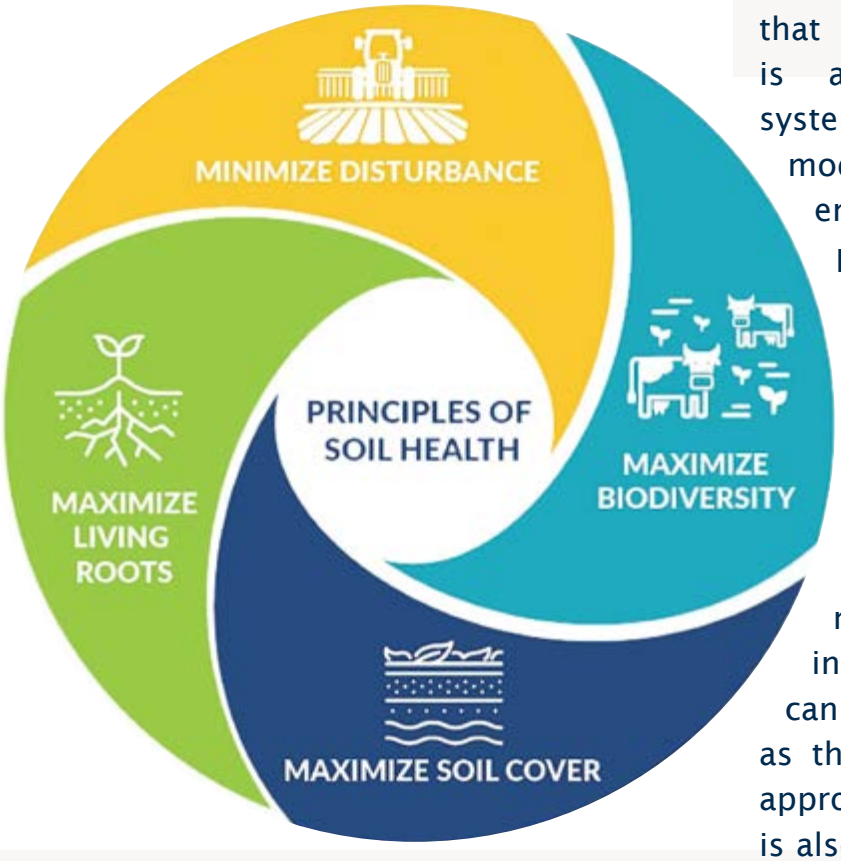

Figure 1. USDA Principles of Soil Health

While some producers in Michigan have successfully implemented these approaches, most are not using these key practices. In the 2022 USDA Census of Agriculture, 10% of harvested cropland acres were planted to cover crops, while 20% of acres were in no till and an additional 34% used reduced tillage systems[v]. While there have been some attempts to assess the level of soil health system adoption and associated outcomes[vi], but it is not possible to gauge the full extent of soil health in Michigan. This underlines the importance of identifying opportunities to build soil health-focused agriculture in the state.

Any attempt to better understand barriers and opportunities to improve soil health also needs to recognize the complex systems that affect farm-level decisions. Agriculture is a dynamic socio-economic-ecological system: in the classic three-legged stool model of sustainability, there are co-equal environmental, economic, and socio-political dimensions that all affect each other. Improving soil health in production systems is a key mechanism for increasing the environmental performance and sustainability of these systems, but there are also economic and socio-political considerations. Individual farms operate in a complex marketplace that can constrain or influence farm management decisions, as can local, state, and national policies. Just as the soil health framing takes a systems approach to farm management decisions, it is also critical to recognize the economic and social dimensions that shape these decisions.

The goal of this project effort has been to center the perspectives of those with the both the greatest agency and need to enact agricultural systems that build and maintain healthy soils. While current programs, policies, and efforts offer important conservation support for Michigan's producers, it is clear both from national data on conservation adoption and from what we have heard during listening sessions throughout the state that there is more to be done. These factors clearly showcase the need to further advance soil health practice adoption in Michigan. To accomplish this important goal, it is necessary to understand and reflect the needs of producers and landowners. By engaging producers who have successfully adopted soil health-based production systems, as well as those just starting on this innovative journey, we hope to identify new approaches that can meaningfully move the needle on conservation, while also maintaining a vibrant and diverse agricultural sector.

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LISTENING SESSIONS

OUR PROJECT TEAM CONVENED A SERIES of listening sessions in which we invited a small group of producers, landowners, and advisors to discuss their experiences with soil health practices, state and federal conservation programs, and perspectives on what is needed. The producers invited to these sessions had a range of experiences with conservation and soil health systems, with most producers having implemented multiple practices over multiple years. We held listening sessions in multiple regions of the state to capture some of the extensive diversity in growing regions.

Between November 2023 and December 2024 we held four listening sessions. The first (November 2023) and last (December 2024) were both held in Van Buren County. Reflecting the diversity of southwest Michigan agriculture, the producers included row crops (corn, soybeans, wheat), vegetable and fruit crops, and livestock (dairy, poultry, beef cattle). We also held a discussion in the Traverse City area in March 2024. The growers at this session included fruit orchards and vineyards, vegetable production, and livestock. In February 2024 we held a listening session in the Saginaw valley area with farm advisors. The focus in this session was on production of food grade grains, an important component of diversifying rotations and allowing easier implementation of cover crops for soil health benefits.

Each listening session was hosted by a local partner organization, including conservation districts, local non-profit organizations, and Michigan State University Extension. We encouraged local partners to invite producers with whom they had relationships and

who would be willing to engage in a group dialogue. We also invited the local partners to participate in the discussion as well so we could better understand the dynamics and relationships that play out locally between conservation advisors and producers. We did not intend these sessions to be representative of the full scope of the agricultural sector in Michigan; similar to a research focus group, these dialogues were intended to reflect a depth of perspective rather than capturing every experience. Our aim with these discussions was to understand how some producers have been successful in adopting conservation practices in the current policy environment and co-develop with them what additional efforts could better support them, as well as the majority of farmers who are not adopting soil health-based systems.

These listening sessions were informal and wide-ranging. The two facilitators from our team prepared a short introductory background about our past and current project efforts, our goals for the conversation, and a small number of questions to start the conversation. Following introductions from everyone in the room, we allowed the conversation to develop based on the perspectives and interests of participants. We encouraged cross discussion and participants to ask each other questions, not just speak to the facilitators. The initial questions posed by facilitators included:

- How many of you have participated in federal [Farm Bill] conservation programs (e.g., EQIP or CSP) or the MAEAP program? What were your experiences like?
- What would help you connect to new market opportunities?
- What does regenerative agriculture (conservation ag/sustanable ag) look like on your farm?
- What could the state do to better support you and others in order to see more regenerative ag across the Michigan landscape?

The two listening sessions held in the Van Buren County offered us the opportunity to reflect back to the same group of participants what we heard in previous sessions and help to clarify or further refine the insights generated at these. This iterative discussion format was invaluable to developing concrete ideas for new program efforts, and in some places provided important nuance about issues we had heard previously.

Below we provide the major insights generated through these dialogues. We categorized these

into four broad themes, largely mirroring the structure of our earlier report: Scaling Up Conservation Agriculture. The insights shared below do not reflect the entirety of the discussions but focus on current gaps and potential solutions to key issues associated with scaling soil health. The producers at these sessions also shared many insights about their own experiences with soil health practices at the field and farm scale. One dynamic that emerged at these discussions was the desire by participants to share and learn from each other about management issues. While participating in these conversations was an incredible learning opportunity for our project team, not all these insights were directly relevant for this project.

The insights presented below reflect the notes and interpretations of the facilitators. We did not audio record these conversations. In only a few cases did we take direct quotes. It is our hope to accurately and authentically reflect the perspectives of participants in this report without directly identifying any individuals or focusing on personal characteristics.

MARKETS AND SUPPLY CHAINS

AMONG THE MOST DOMINANT TOPICS brought up by producer participants was the importance of markets to support on-farm soil health efforts. One of the central principles of soil health is to increase diversity in agricultural systems by using cover crops, incorporating additional crops in rotation, or integrating livestock into cropping systems. While farmers can benefit directly from increasing soil health through these management decisions, they also need supportive market outlets for additional crops or products. For example, producers can gain substantial soil health benefits from using cover crops, but there can be additional financial benefits if they also produce livestock (by providing winter forage) or can make lease arrangements with farmers who do. Farms must be profitable to stay in business, and incorporating cover crops or changing crop rotations can come with additional costs, such as seeds or equipment. There need to be viable markets to sell products into, and these markets require not only end consumers but an entire supply chain infrastructure.

The producers we spoke with all emphasized

the challenges of finding profitable markets, especially for additional crops beyond corn and soybeans throughout Michigan's dominant cropping systems. Several growers indicated that corn is a challenging crop to produce profitably and can also be difficult to work with in soil health systems due to the long growing season. Small grains, including wheat, rye, barley, and oats, all provide more rotational flexibility and are easier to integrate with cover crops. The limitation with small grains is almost entirely lack of markets. Transportation costs can eat into profit margins for crops, so sometimes outlets exist within the state but are not geographically convenient. Producers also face challenges in storage and handling additional crops.

Market challenges also exist in fruit and vegetable production areas. The Traverse City region, a traditional center of Michigan's orchard and vineyard crops, has faced significant challenges in recent years due to international competition. Several producers we spoke with have been diversifying production beyond tart cherries, moving to apples and other orchard crops, as well as vineyards for the regional wine industry. These are highly competitive markets as well, however, and land prices and land access are acute problems in this region. Vegetable and fruit producers in this region as well as southwest Michigan emphasized the role of overproduction in reducing profit margins. Many producers have struggled to find reliably profitable outlets for apples, grapes, blueberries, and processing vegetables due to overproduction.

An additional challenge producers spoke to concerned differentiation within crop markets. A few producers have diversified their soybean varieties to access more specialized markets. Others have explored producing food-grade grains (wheat, barley, oats) to tap into higher value markets. Compared with standard commodity crops,

these more specialized products require additional handling and storage considerations that increase facilities costs and producer training. These are not insignificant costs and can be difficult for producers to justify without assurance that these markets will be viable in the long term.

A few producers spoke about previous negative experiences with nascent markets, including barley and hops, which showed promise but have not yet materialized in the long term. This is an especial point of caution for those working to advance crop diversity; it is critical to not over-sell opportunities for producers. Developing robust markets requires simultaneous action across the supply chain; while there need to be producers willing to grow new crops or create new products, there also needs to be appropriate infrastructure (handling, transportation, storage, aggregation) and sustainable markets. This creates a coordination challenge and conservation advocates need to work with development agencies, lenders, and agricultural services companies to ensure viable development strategies for new markets.

To support viable, diverse markets, there is a need for greater investment in robust supply chains. This could include grants or loans for new businesses in storage, aggregation, and transportation; funding for on-farm storage; investment in transportation infrastructure to lower producer costs; training and support for producer diversification efforts; and additional research into crop varieties that contribute to healthy soils (such as small grains). Research is needed on improved crop genetics for additional crops, application of emerging technologies (artificial intelligence, data science, sensors, and drones) with diversified cropping systems, and advanced soil health testing to support monitoring and quantification of soil health benefits.

CONSERVATION LADDERS IN PROGRAMS

ONE OF OUR PROJECT GOALS WAS to understand producer perspectives on current programs and identify any needed improvements. We specifically asked participants during the discussion introduction how many had participated in either federal conservation programs or the Michigan Agriculture Environmental Assurance Program (MAEAP). Most of the participants had some experience participating in conservation programs. As this listening session approach was not intended to be a representative sample, we did not specifically record exact participation rates. Our focus instead was on understanding producer views of these programs and what might be needed in addition.

While we opened these discussions with this focus, most participants did not have very strong opinions about current programs. Many shared about individual challenges participating in programs, similar to what we and others have noted in past work[vii]. These include paperwork burdens in submitting program applications or managing contracts, lack of success in past program applications, lack of knowledge about program options, and restrictive requirements that limit producer flexibility in managing practices. Specifically, with the MAEAP program, many noted that verification processes take significant time and program requirements are sometimes impractical in their farm operation.

The main limitation expressed by most participants reflected more the goals and intended participants of current programs. A common sentiment concerning MAEAP was that it was a well-intended program that generally sets a "low bar" for conservation. Several producers indicated that they had allowed their verification to lapse, or had not completed initial verification, because they did not see value in going through a time-consuming process when they were going above and beyond program requirements in other aspects of their farm. MAEAP is focused on broad environmental protection for Michigan farms, with soil health as only one area of focus. Many producers we spoke with indicated that their conservation goals were not necessarily the same as MAEAP, limiting its usefulness for them.

When speaking to what more effective programs to support soil health would look like, producers emphasized the need for holistic and flexible programs. While they acknowledged the need for reporting and accountability in programs, this needs to be balanced with the inherent complexities in implementing conservation. Soil health systems vary widely depending on context; approaches that work in orchards and vineyards are very different from row crop systems, even if the basic goals are the same. While current programs do account for different types of production systems, producers we spoke with emphasized the need for greater flexibility to adjust approaches to meet the needs of individual farms. Soil health is also a dynamic, outcome-focused approach to conservation. Rather than programs focused specifically on supporting individual practices, there is a need for programs that incentivize adaptation and innovation to achieve soil health outcomes.

"PRODUCERS IDENTIFIED THE NEED FOR PROGRAMS THAT NOT ONLY ASSIST PRODUCERS AT THE BEGINNING OF IMPLEMENTING SOIL HEALTH PRACTICES BUT ALSO THOSE SEEKING TO "LEVEL UP" THEIR CONSERVATION."

The most important concept emphasized by many producers is the need for a more robust system of programs that support producers at a variety of stages of conservation implementation. Producers spoke about the need for programs that not only assist producers at the beginning of implementing soil health practices but also programs aimed at early adopters and those seeking to "level up" their conservation. These programs would need longer time frames and more flexibility for participants, with more of a focus on achieving farm-scale outcomes than individual practices. These "conservation ladders" can help producers progress from basic conservation practices to systems-based approaches such as soil health.

INVESTING IN LOCAL CAPACITY

DESPITE THE MANY LIMITATIONS OF existing programs, producers had largely positive experiences with their local conservation agencies and organizations. Several reflected positive interactions with their local conservation district, MSU Extension, and conservation non-profits. Producers generally spoke more positively about their relationships and technical support from their local conservation districts than about the programs in which they had participated. Even producers with positive experiences in programs were not particularly interested in talking about the programs themselves. Several who had participated in programs did not entirely understand the program details and had relied on guidance from their local program representatives to help with the contracting, planning, and reporting processes.

These conversations were also happening during a period with a proliferation of new program opportunities, especially related to increased conservation funding through the federal Inflation Reduction Act (IRA) and the Partnerships for Climate-Smart Commodities (PCSC) projects. Few producers seemed to fully understand these programs, especially the new PCSC projects, which were often implemented through complex public-private partnerships. Most producers did not seem particularly interested in learning the details of these programs and were more interested in understanding how these programs could help them accomplish

their goals. This is where having trusted local conservation advisors is key; it is the role of local conservation districts and NRCS to help producers navigate programs, in addition to providing critical technical assistance.

Producers emphasized the importance of building long-term, trusting relationships with local advisors. Each of these conversations was made possible by the strong relationships between key advisors and local producers; participants all spoke very highly of individuals they had worked with locally. These professionals are not only knowledgeable about conservation practices specifically but also committed to supporting their producers on a personal level. Participants emphasized the role that time plays in developing these relationships, with trust established over years working together. One limitation that several producers reflected on was high turnover rates in local conservation agencies, especially at conservation districts. It can be difficult to develop trust in individuals when they may only be in their position for a year or two before leaving for another position.

While cost share programs are an important tool for supporting conservation adoption, the relationships built between conservation advisors and producers that can be facilitated by programs is a key, and often underappreciated, benefit. Many participants indicated that their success in achieving soil health outcomes was dependent on having trusted and knowledgeable local advisors. There is a need for greater funding and capacity building at the local level to provide producers with a support structure to implement soil health systems. This could include providing sufficient and stable funding for technical staff positions; training and onboarding for new staff to ensure they have the best technical assistance tools; greater support for outreach and community engagement to expand the pool of producers that districts engage; and more opportunities for professional networking, especially between public conservation agencies and private sector advisors.

PEER-TO-PEER LEARNING

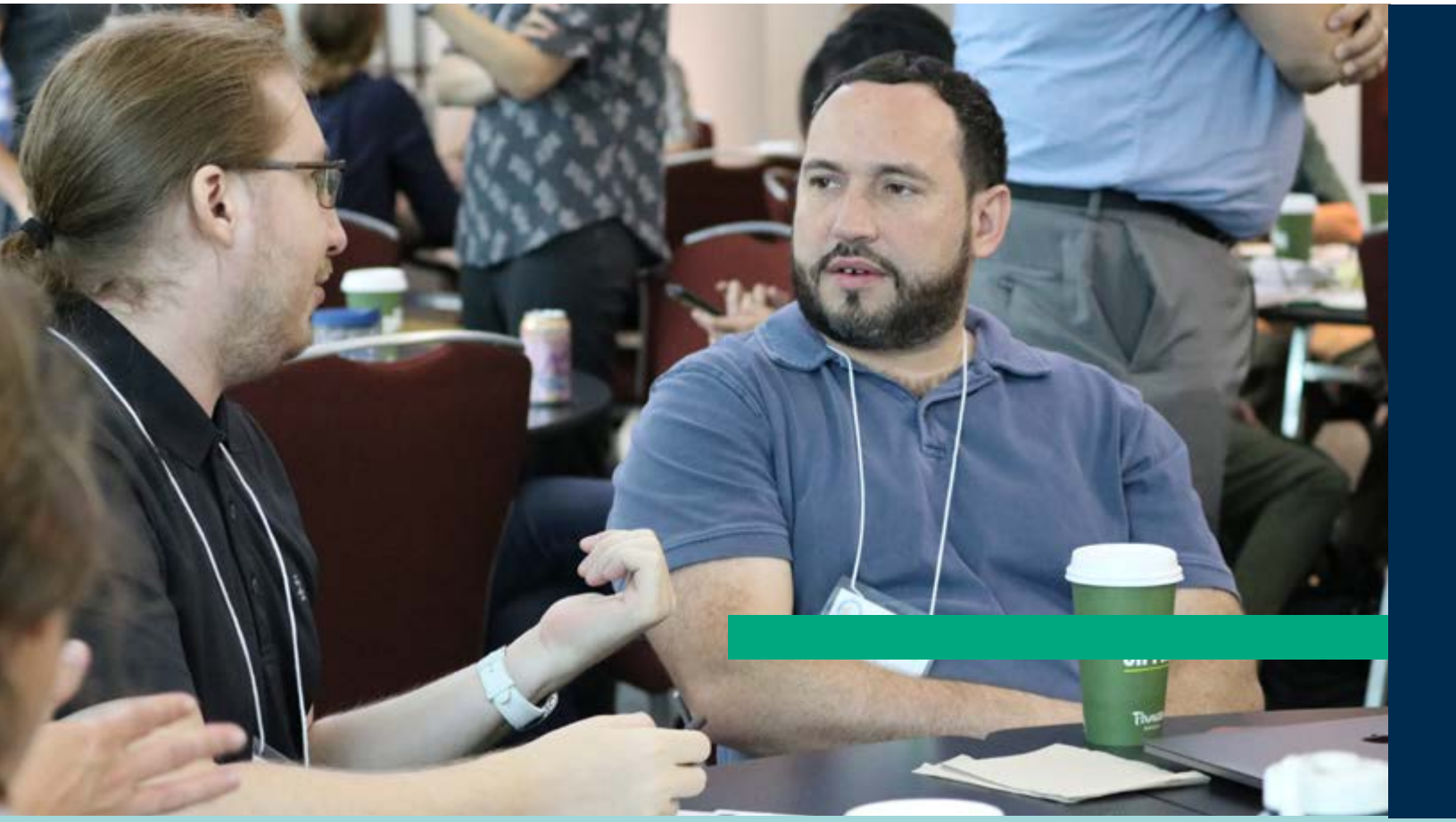
THESE CONVERSATIONS FOCUSED NOT only on government policies and programs but also on other efforts or mechanisms that can encourage adoption of soil health practices. Among the approaches most often brought up by participants was the need for more peer-to-peer connections around soil health and conservation issues. Farmers want to learn from other farmers, not just about conservation practices but about a wide range of management issues. This includes product marketing, crop/production decisions, nutrient and pest management, and tools and equipment.

While farmers value connecting and learning from other farmers, many indicated that they lack opportunities to do so. Many producers attend farm conferences, conservation events, and other outreach meetings, but these often have a narrow focus and do not always allow for general networking. Producers who attended our listening sessions valued the chance to have open, wide-ranging discussions with their peers. While we hosted these events with a project goal of learning from producers and discussing potential soil health programs, we valued providing a venue for producers to come together to discuss what was top of mind for them. Participants generally indicated appreciation for the chance to discuss issues with fellow producers.

Even though producers see significant value in peer discussions, these are largely not happening organically. Connecting

producers in peer-to-peer discussions can be facilitated by organizations, such as local conservation districts, extension, or organizations such as the partners in this project. This requires some basic resources, including funding for meeting spaces and other meeting costs (someone has to bring the coffee and snacks). Perhaps the biggest barrier expressed by our conservation partners was the lack of flexibility and support for open-ended networking in many programs. Conservation organizations are focused primarily on administering conservation programs, and while outreach efforts can be supported through grants and general operating funds, agencies are often required to narrowly focus efforts on particular practices or programs. As noted above, soil health is a more holistic, outcome -oriented approach that may defy traditional outreach efforts.

Peer networking needs increased support, both through additional dedicated funds for facilitating organizations and greater recognition of the benefits of peer-to-peer learning. While these outcomes can be difficult to quantify in the short-term, there is a need to evaluate long-term effectiveness in these network-based approaches. There is some existing research in other states that indicates the importance of peer networks , but more work is needed in the diverse production context of Michigan. Additionally, the skills required to facilitate and lead peer networking groups are different from providing effective technical assistance. There may be a need to provide training and support for facilitators and leaders to ensure the greatest potential success for peer networks.



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