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Fostering and Facilitating Farmer Leadership in Watershed Management Projects

A NEEDS ASSESSMENT




■ REPORT PREPARED BY

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Project Overview

This report is part of a project funded by the U.S. Environmental Protection Agency (USEPA) aimed at building capacity for watershed leadership and management in 12 Mississippi River Basin states. The project addresses a shared priority of the Mississippi River and Gulf of Mexico Watershed Nutrient Task Force (HTF) and the land-grant university multi-state research and extension (SERA-46) committee. This needs assessment will be used to improve the coordination and delivery of educational programming aimed at increasing the number and quality of farmer-led watershed initiatives in the Mississippi and Atchafalaya River Basins (MARB).

The purpose of this needs assessment is to inform project leaders and their collaborators regarding:

1. **Existing leadership training programs for watershed practitioners, farmers and farm advisors.**
2. **Successful methodologies for fostering farmer-led watershed initiatives.**
3. **Geographical, content and pedagogical gaps in existing educational programs.**

Methods

LITERATURE REVIEW:

A literature review was conducted by graduate students at The Ohio State University (OSU) led by Dr. Joe Bonnell, Program Director for Watershed Management. The purpose of the literature review was to identify published accounts of farmer leadership in a watershed management context in order to better define and describe farmer leadership; identify ways in which universities, government agencies, and other institutions initiate and support farmer leadership of watershed initiatives; and to identify lessons learned from these published reports. The review began with a search for scholarly articles and publications on watershed management in the MARB, emphasizing farmer participation in a leadership role. Search terms included:

a. **Watershed management**
b. **Agricultural watersheds**
c. **Farmer engagement**
d. **Farmer leadership**
e. **Farmer-led watershed management**
f. **Nutrient management**
g. **Nutrient reduction**

Publications that emerged from this search were reviewed for relevant findings. Sources included peer-reviewed journal articles, published reports and books. The reviewers identified findings and exemplary case examples that addressed one of the following topics:

a. **Roles of farmer leaders** in watershed initiatives (i.e., what does farmer leadership look like across the MARB?).

b. **Benefits and challenges** associated with farmer leadership.

c. **Descriptions of organizations and institutions** that initiated or supported farmer leadership and how that support was provided.

d. **Findings and recommendations** for fostering farmer leadership of watershed initiatives.

PROGRAM SCAN

As part of the needs assessment, the project team proposed to identify existing leadership training programs for watershed practitioners, farmers, and farm advisors. Leadership training programs aimed at watershed practitioners in general had been previously identified and described as part of an earlier project funded by the North Central Region Water Network. Therefore, the researchers focused their search on programs aimed specifically at increasing the watershed leadership capacity of farmers or farm advisors.

Two strategies were employed to identify potential programs:

1. **Internet search:** A graduate research associate (GRA) searched the websites for each of the 12 land-grant universities participating in SERA-46 for watershed projects that engaged farmers in leadership roles. A more general search was conducted using each of the SERA-46 states' names with the search term 'watershed protection farmer.'
2. **Members of SERA-46 and the HTF Coordinating Committee were invited to complete an online survey** soliciting suggestions for additional programs, projects, or individuals to contact within the MARB that may have been missed by the internet search.

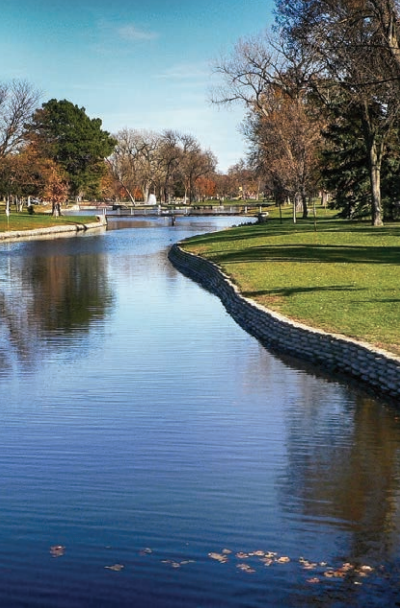
Once a list of potential projects, programs, and key contacts was compiled, the list was prioritized and interviews with key contacts were scheduled. An open-ended interview guide was developed to ensure consistent data collection across interviews. Programs and projects were prioritized based on the level of farmer engagement (projects and programs demonstrating higher levels of farmer leadership were prioritized) and also to ensure that interviewees represented different types of organizations (e.g., universities, non-profits, state agencies) involved in supporting farmer-led watershed initiatives. Programs were also selected in order to represent the range of scales (e.g., sub-watershed, state, regional) at which programs that foster farmer-led watershed initiatives function.

Researchers took notes during each interview which were reviewed in conjunction with the literature review in order to describe the various approaches to supporting farmer leadership of watershed initiatives and lessons learned from these programs and projects.

Findings

The findings reported are based on the literature review, interviews, and program scan. They are organized into four sections:

1. **A discussion of farm advisors as leaders in watershed initiatives.**
2. **A description of the various forms farmer leadership has taken in the MARB.**
3. **A description of the types of support various organizations and institutions have provided across the MARB to foster farmer leadership of watershed initiatives.**
4. **Examples of how supporting organizations and institutions provide support at different scales, from local to regional.**



FARM ADVISORS AS WATERSHED LEADERS

One of the objectives of this needs assessment was to describe the roles of farmers and farm advisors as watershed leaders. The literature review and program scan uncovered numerous examples and recommendations for fostering farmer leadership, as described below, but no examples or recommendations for supporting watershed leadership among farm advisors. For this report, farm advisors are defined as private or public sector professionals who provide technical, educational, and financial services directly to farmers on issues that can affect farmers' conservation behaviors. These can include certified crop advisors (CCAs), soil and water conservation technicians, Extension educators, lenders and financial consultants, agricultural engineers, and agricultural products and services representatives. Not surprisingly, public sector farm advisors, in particular university Extension specialists, Natural Resources Conservation Service (NRCS) field staff, and soil and water district technicians are frequently mentioned in case studies of agricultural watershed projects as key leaders and supporters. Private sector consultants and financial advisors are rarely mentioned as playing key roles in watershed initiatives. Among those farm advisors who become involved in watershed initiatives, it is reasonable to assume a wide range of skills and comfort levels with watershed-scale planning and management. Still, several researchers have noted that many agricultural and conservation technicians lack training in the human dimensions of watershed management, such as facilitation and leadership development.

The remainder of this section is focused on farmers as watershed leaders, in large part because farmers have received much more attention than farm advisors with respect to outreach and engagement in agricultural watershed initiatives. Nevertheless, the authors recognize the important role of farm advisors in leading agricultural watershed initiatives.

"…several researchers have noted that many agricultural and conservation technicians lack training in the human dimensions of watershed management, such as facilitation and leadership development."

WHAT DOES FARMER LEADERSHIP LOOK LIKE?

This report defines farmer leadership as any activity undertaken by farmers as part of a coordinated watershed initiative intended to expand the impact of that initiative beyond the farmer's own operation. That is, farmers are taking on a leadership role when they contribute to a coordinated watershed initiative in a way that engages other stakeholders to contribute to the initiative. Based on the many farmer leadership activities identified through the literature review and interviews, the authors have developed the following typology of farmer leadership:

1. **Peer-to-peer:** includes recruiting other farmers to participate in project activities, demonstrating BMPs on the farm, providing testimonials, and mentoring other farmers to promote priority BMPs for water quality.
2. **Consultation:** includes serving on advisory groups to assist watershed project staff to define project goals, tactics, or strategies.
3. **Watershed level decision-making:** includes serving in a formal leadership role to define project goals, tactics, and strategies and to direct the distribution of resources.

PEER-TO-PEER

Peer-to-peer is the lowest level of farmer engagement that qualifies as a leadership role for this report. Most watershed projects in agricultural watersheds focus on encouraging farmer adoption of best management practices (BMPs) aimed at addressing water quality impairments. In most cases, the decision to adopt or not adopt BMPs rests with the farm owner or operator. When farmers accept a role of promoting BMPs or facilitating BMP adoption by other farmers, they are

to some extent assuming a leadership role. There is a great deal of evidence that farmers are more likely to trust recommendations about farm practices when they come from other farmers rather than other sources (Rogers, 2003). More recent research on farmers' adoption of conservation practices has reinforced the importance of social networks in changing conservation attitudes and behaviors (Prokopy et al., 2008). Further, Morton, Selfa and Becerra (2011) described these social networks as "webs of influence" in contrast to "chains of command." Morton (2011) argues that changes in conservation behaviors are more likely to be sustained over time when farmers are motivated by social pressures from their peers rather than by force (i.e., regulation) or economic incentives.

Nearly every agricultural watershed project has utilized some form of peer-to-peer leadership to encourage BMP adoption. This often takes the form of a field day where farmers visit one of their neighbor's farms to see a BMP on the ground and hear a testimonial from the landowner. These one-off events are not inconsequential, but some watershed managers have found ways to foster ongoing peer-to-peer interactions that lead to the development and strengthening of social networks associated with sustainable changes in conservation attitudes and behaviors. Morton and McGuire (2011) described how Iowa State University (ISU) facilitated peer-to-peer leadership in the Hewitt Creek watershed by identifying a core group of influential farmers within the watershed. ISU faculty and specialists met with this core group to discuss water quality issues and options for solving them. The group then became a catalyst for change by inviting neighboring farmers to participate in future watershed initiatives. The resulting farmer network was then empowered to direct project resources to conduct research trials and monitoring on participating farms so that the results of those trials could be shared throughout the network.

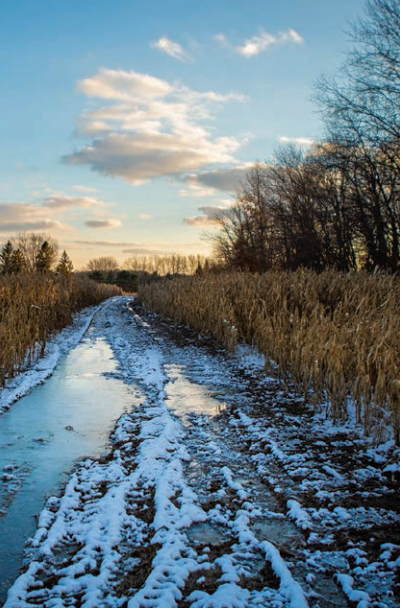
"…[Consultation] leadership is perhaps most critical in agricultural watersheds where farmers ultimately decide which BMPs will be implemented on their own farms."

CONSULTATION

Consultation occurs when farmers are given the opportunity to advise watershed project managers on project goals, planning, tactics and strategies. Project managers maintain ultimate decision-making authority, but participating farmers are consulted, and their opinions and recommendations are given serious consideration. The importance of consulting with stakeholder groups is frequently cited as a critical component of effective watershed management. This form of leadership is perhaps most critical in agricultural watersheds where farmers ultimately decide which BMPs will be implemented on their own farms. Consultation leadership is often facilitated through the creation of a farmer advisory group, committee, or board. While consultation can be achieved through one-on-one conversations, the group setting facilitates peer-to-peer learning and the strengthening of social networks.

In the Sugar Creek watershed near Wooster, Ohio, a small group of farmers organized and encouraged their peers to participate in conservation activities aimed at addressing water quality impairments related to nutrient and sediment loads in the watershed. They focused on organizing educational programs, farm tours, and water-quality testing for interested farmers. They chose not to become involved in defining a watershed project vision, goals, or strategies in order to avoid the perception that they were making decisions affecting other farmers' operations.

In northeast Iowa, farmers provided information about local crop and livestock management practices to refine watershed models used to develop total maximum daily loads (TMDLs). According to Brown and Ingels (2011), farmers, Extension staff, and modeling technicians worked collaboratively to identify and test alternative management scenarios. These scenarios were used to inform the selection and targeting of BMPs at the farm and watershed scale. Brown and Ingels showed that farmers had more trust in the recommendations that came out of the modeling process because they had participated in selecting the management scenarios.



WATERSHED LEVEL DECISION-MAKING

Watershed level decision-making is the highest-level of farmer engagement in watershed management initiatives. As previously noted, all farmers are decisionmakers for their own operations. In this report, however, watershed level decision-making is defined as occuring when farmers have the authority to decide watershed project goals, strategies, and tactics and to direct resources such as incentive payments, technical services, and equipment to achieve project goals. In some instances, farmer leaders have complete decision-making authority (i.e., self-governance) but farmers often share decision-making authority (i.e., co-management) with government agency personnel (Prokopy and Floress, 2011).

The farmer-led council in the Hewitt Creek watershed in Iowa was empowered to lead watershed management efforts. Faculty and staff from ISU facilitated initial farmer meetings, and the Iowa Farm Bureau and Iowa Corn Growers Association provided funding. The farmers themselves elected leaders from among their peers, directed research to inform watershed management strategies, and acquired external funding to provide cost-share as an incentive to encourage implementation of BMPs (J. Benning, personal communication, 2017).

WHO IS SUPPORTING FARMER LEADERSHIP AND HOW ARE THEY SUPPORTING IT?

Support for farmer-led watershed initiatives comes in many forms and through a diverse array of universities, governmental, and non-governmental entities. The various forms that support takes can be organized into the following categories:

1. **Initiating**
2. **Facilitating**
3. **Material support**
4. **Technical support**
5. **Educational support**
6. **Motivational support**

"Initiating farmer leadership involves convening groups of farmers within a watershed to discuss water quality issues and explore opportunities for cooperation on watershed planning and implementation."

INITIATING

Initiating farmer leadership involves convening groups of farmers within a watershed to discuss water quality issues and explore opportunities for cooperation on watershed planning and implementation. While there are almost certainly cases of farmers establishing watershed initiatives on their own, more typically farmer leadership in watershed initiatives begins when an organization or agency with a statutory responsibility or mission to address water quality impairments reaches out to farmers and invites them to participate in watershed planning and implementation activities.

In the Sugar Creek watershed in Ohio, faculty and specialists with OSU's Agricultural Research and Development Center in Wooster invited a small group of farmers to meet and discuss the farmers' concerns about a report issued by the Ohio Environmental Protection Agency (OEPA) indicating that Sugar Creek was one of the most impaired watersheds in the state. OSU personnel hosted and facilitated the meetings, but the small group of farmers who attended the initial meetings took responsibility for inviting their friends and neighbors to increase farmer participation in the group (Weaver, Moore, and Parker, 2011). ISU has used a similar "snowball" approach to expand farmer participation. Morton and McGuire (2011) reported that in initiating farmer-led watershed groups, typically ISU personnel will engage four to six farmers living in a watershed in one-on-one conversations before convening the same group to discuss water issues and options for solving

those issues. This initial group becomes a catalyst for change in the watershed by inviting other farmers in the watershed to participate.

It is worth noting that efforts to engage farmers in watershed initiatives may be accelerated by a catalyst event such as new funding opportunities for implementing BMPs, the threat of regulation, or new information about a water quality concern (Prokopy et al., 2014). In the example above, farmers in the Sugar Creek watershed initially organized to conduct their own water quality monitoring program in order to disprove an OEPA report suggesting water quality in Sugar Creek was among the worst in the state.

FACILITATING

Facilitating farmer leadership in watershed initiatives, as used in this report, is narrowly defined as services provided by a lead or supporting organization or agency to organize and coordinate farmer engagement. Frequently, these services take the form of meeting coordination and facilitation. Personnel with the Conservation Technology and Information Center (CTIC) facilitated and coordinated meetings of farmers and other representatives of local agricultural communities to create Nutrient Management Coalitions in three sub-watersheds within the Mississippi River Basin. Brown and Ingels (2011) emphasized the critical role skilled facilitators played in farmer-led watershed councils in Iowa. ISU Extension assigned community development specialists to facilitate meetings of their farmer-led watershed councils until the group had elected leadership, set its own goals and agenda, and was able to plan and implement actions independent of the facilitator.

MATERIAL SUPPORT

Material support for farmer leadership comes in many forms. Perhaps the most common is in-kind support (e.g., meeting space, administrative services, website hosting services). Some agencies and organizations provide funding for farmer leadership activities. The Wisconsin Department of Agriculture, Trade, and Consumer Protection (WDATCP) awards up to $20,000 in matching funds to farmer-led groups that focus on promoting farmer adoption of BMPs to address nonpoint source pollution within a watershed. Funding can be used for startup costs associated with group formation, incentive payments to farmers to promote BMP adoption, and to conduct water quality monitoring ("Producer-Led Watershed Protection Grants," 2017). In the Sugar Creek watershed, OSU provided laboratory testing of water quality samples to support farmers' efforts to assess water quality in the streams running through their farms.

TECHNICAL SUPPORT

Technical support, like material support, takes many forms, including water quality monitoring, assistance with conducting on-farm research trials, and computer modeling to predict the relative effectiveness of alternative BMP implementation scenarios. Soil and water conservation district technicians and university Extension specialists have long provided technical assistance to individual farmers to assist in the adoption of conservation practices. In farmer-led watershed initiatives, technical support is provided in service of assessing water quality problems and solutions at the watershed scale. Brown and Ingels (2011) described how technicians and specialists provided technical assistance to farmers in Iowa's Maquoketa River watershed to address questions raised by the farmer-led watershed councils. According to the authors, specialists acted as facilitators of cooperative learning processes. Farmers and specialists acted as a team to identify goals to improve water quality at the watershed level and then worked with individual farmers to test conservation practices through field trials. Farmers then shared the results of their field trials with each other as a way to improve the effectiveness of conservation practices across farms and throughout the watershed.

Agronomists, agricultural retailers, Technical Service Providers (TSPs), and other agricultural and conservation consultants are an emerging group of farm advisors who provide technical support to farmers to aid in conservation decision-making. These technical advisors can play an important role in supporting farmers individually and as farmers work together on a watershed basis. Farm advisors assist with water monitoring, watershed planning, on-farm research trials, in-field soil and plant testing, and other technical services that further the efforts of farmers and watershed groups. Advisors with specialized skills and credentials can assist watershed groups with practice design and implementation.

EDUCATIONAL SUPPORT

Educational support can be lumped into two broad categories: education in support of watershed and water quality and education in support of farmer leadership. By far the vast majority of examples of educational support described in the literature and by project leaders falls into the former category. Perhaps this should not be surprising as Brown (2011) noted that most specialists (e.g., agronomists, agricultural educators, conservation technicians) are not trained in the social dimensions of watershed management, including leadership development. The review of literature and farmer-led watershed programs did not uncover any programs specifically designed to improve participating farmers' communication or leadership skills. This is not to say that farmers who assumed leadership roles did not receive guidance or mentoring from professionals with whom they collaborated. At the very least some agency, university, and non-governmental professionals who work with farmer leaders model effective leadership behaviors. Nevertheless, the apparent dearth of training specifically designed for farmers engaged in watershed management in a leadership role invites further discussion. A good place to start such discussion is around the need for educational interventions to enhance the leadership skills of farmers. Such interventions may be necessary in order to replicate successful farmer-led watershed initiatives across the Mississippi River Basin. Opportunities for such educational interventions are discussed more in the conclusion and recommendations.

"…the apparent dearth of training specifically designed for farmers engaged in watershed management in a leadership role invites further discussion."

MOTIVATIONAL SUPPORT

Farmers are motivated to engage in watershed efforts, assume leadership positions, and maintain their roles in watershed groups for many reasons. Watershed groups facilitate educational opportunities and exchanges of peer knowledge that many farmers seek. Many farmers and landowners are looking to better understand how land use and watershed management impacts their farms and vice versa. Farmers and landowners are also seeking to build a watershed community and achieve farm-level water and soil quality goals in order to avoid regulation. Farmers and landowners are also engaging in watershed efforts and leadership roles for the opportunity to conduct water monitoring or soil testing at the farm and watershed scale to establish baseline conditions for planning and goal setting. Farmers and landowners sometimes join or lead watershed efforts in response to a local or regional crisis, such as newly identified water impairments or fish kills Water quality improvement practices can sometimes have positive financial impacts that motivate farmers to participate in watershed efforts. Motivating factors in watershed leadership and participation include learning how to minimize inputs and maximize profit and environmental benefits, utilizing and connecting to consumer-driven opportunities, and gaining access to unique or exclusive technical and financial incentives. Finally, engaging in leadership roles and conservation efforts can reinforce and further grow farmers' identity as natural resources stewards while ensuring that their farming legacy continues.

The diverse array of university, governmental, and non-governmental entities who work with farmers in a watershed capacity often play a significant role in determining these motivations, highlighting the benefit of taking or maintaining a leadership role, and keeping farmer leaders and watershed group participants engaged.

A NOTE ABOUT PERFORMANCE-BASED MANAGEMENT:

While much of the support provided for farmer leadership of watershed initiatives can be classified into one of the five categories described in this section, the performance-based management approach described by Morton and McGuire (2011) represents an integration of multiple types of support that deserves special mention here.

As applied to the Hewitt Creek watershed, the performance-based management approach emphasized collaborative learning among farmers, Extension faculty, and field specialists who worked together to identify water quality objectives and to identify and apply agronomic decision tools to assess and evaluate the impacts of management practices on water quality and farm profitability. In Hewitt Creek, ISU helped facilitate meetings between farmers and specialists to develop performance-based management strategies and goals. ISU also provided material and technical support to conduct on-farm trials of alternative conservation practices. The performance-based management process, while not necessarily an educational program in the traditional sense, also represents a form of educational support by facilitating collaborative learning through social networks.

This multi-faceted approach to supporting farmer-led watershed initiatives is notable both for the degree to which it engages farmers as co-learners and leaders and for the level of human and material resources apparently required over extended periods of time (i.e., multiple years) to be implemented successfully.

SUPPORT AT DIFFERENT SCALES (LOCAL, STATE, REGIONAL)

In addition to providing different types of support, the organizations and institutions that support farmer leadership in watershed initiatives can also operate at different scales. Many of the examples described above represent a local (watershed or sub-watershed) scale approach. By working at this scale, supporting institutions can tailor services provided to the local social, economic, and environmental context. Some institutions, like ISU, Iowa Soybean Association, American Farmland Trust, and CTIC have replicated support provided in one watershed to other watersheds across a state or region, but these examples represent a local-scale approach (HUC 10 or smaller) applied in multiple watersheds, rather than a truly regional-scale approach.

No examples of regional-scale organizations or programs specifically aimed at fostering farmer-led watershed initiatives in the MARB were identified through the program scan. However, two examples of regional-scale support networks are offered as examples: Practical Farmers of Iowa and Leadership for Midwestern Watersheds.

Practical Farmers of Iowa (PFI) was established in 1985 to foster farmer-led investigation and information sharing to help farmers improve the economic and environmental sustainability of their farm operations ("History," n.d.). While not specifically focused on water quality, PFI offers a model for a farmer-led, regional scale collaborative learning network.

Leadership for Midwestern Watersheds (LMW), an initiative led by Sand County Foundation, was created to foster information sharing and collaborative learning among watershed practitioners throughout the Upper Mississippi River Basin (Leadership for Midwestern Watersheds, 2018). While LMW is focused on agriculture-related water quality issues, it is not specifically focused on supporting farmer-led initiatives. Nevertheless, LMW could serve as an example or even as a platform for a regional-scale approach to support collaborative learning among farmer-led watershed initiatives.

Conclusions

There are numerous examples of watershed initiatives throughout the MARB that have engaged farmers and farm advisors in positions of leadership, as defined for this project. Iowa stands out among the MARB states in terms of both public and private support for farmer-led watershed initiatives and in terms of documentation of the successes and challenges of these initiatives. Efforts to engage farmers in watershed initiatives are better documented than efforts to engage farm advisors, though a significant subset of farm advisors such as public sector conservation professionals and Extension educators and specialists have and continue to play important leadership and support roles in watershed initiatives. For that reason, this report is focused primarily on farmer leadership, but it is worth noting that most farm advisors, including conservation professionals, have likely received very little or no training in the facilitation of stakeholder involvement processes. The role of private sector farm advisors such as CCAs and financial advisors in watershed initiatives has received little attention in the case study literature and deserves further investigation. These individuals and the organizations they represent can significantly influence farmers' agronomic and conservation management practices.

Many benefits and challenges associated with farmer leadership of watershed initiatives have been documented. Most importantly, proponents of farmer leadership argue that as farmers are engaged at higher levels in planning and decision-making, management decisions are more likely

Photo: UW-Madison Division of Extension

to be implemented and positive water quality outcomes are more likely to result in the long term. The purpose of this needs assessment was not to evaluate the value of farmer leadership but rather to document how farmer leadership looks on the ground, how it is supported currently and how best to reinforce and expand farmer leadership of watershed initiatives in the MARB.

The following three categories of farmer leadership were identified in the literature review and program scan: peer-to-peer, consultation, and watershed level decision-making. The roles that farmers choose to play in any given watershed will vary depending on multiple factors, such as levels of social capital within the agricultural community, the nature of water quality issues, levels of awareness and concern about those issues, and levels of trust in local government institutions and personnel. The level and type of support needed to facilitate farmer leadership will also vary across watersheds, and the level of resources available to support farmer-led watershed initiatives will vary across watersheds, institutions, states, and regions. However, some general conclusions can be made about what appears to be working and where more support could be provided for farmer leadership.

There is a clear consensus among researchers and practitioners that some support is typically required to initiate and sustain farmer leadership at the local level. Rarely do farmers lead watershed-scale projects without the initiative and support of local institutions or organizations. That support can take many forms, as indicated above, but some resources beyond those immediately available to participating farmers are almost always required to support meetings, communications, research, education, planning, and implementation of conservation practices. Some of those resources, such as meeting space, facilitation, and technical assistance are best provided at the local level. Some resources, such as financial, information sharing, and educational support can be provided at a state or regional scale. Several universities within the MARB provide educational programs for watershed leaders in general, but no programs have been identified that specifically target farmers.

"Rarely do farmers lead watershed-scale projects without the initiative and support of local institutions or organizations."

Watershed networks have also been created at the state and regional levels to facilitate information sharing and collaborative learning among watershed practitioners and leaders, but again, none were identified that specifically target farmer watershed leaders. There are numerous organizations and associations across the MARB that support information sharing and collaborative learning among farmers, and some, such as the Iowa Soybean Association, have committed significant resources to support farmer involvement in watershed and water quality projects. Still, no organizations were identified in the MARB that provide regional-scale support for farmer-led watershed initiatives. Recommendations for regional-scale support of farmer and farm advisor leadership of watershed initiatives are offered on the following page.

Recommendations

This assessment has identified eight recommendations to increase the effectiveness of farmer and farm advisor leadership and engagement in watershed efforts. The recommendations are categorized into three major topics: farmer and advisor leadership development and training; mechanisms to establish and support shared leadership at the local, state, and regional level; and research needs.

FARMER AND ADVISOR LEADERSHIP DEVELOPMENT AND TRAINING

- Regardless of the availability of state or regional-scale support, some level of **financial, technical, material, or educational support** will be required for most farmer-led watershed projects. Organizations providing regional-scale support may want to target resources to those watersheds demonstrating at least a basic level of support from local institutions.

- Existing state and regional-scale networks and capacity-building programs for farmers (e.g., Extension, farm organizations) and watershed practitioners (e.g., Leadership for Midwestern Watersheds) could serve as **models or platforms for new initiatives to support farmer-led watershed projects.**

- Farm communities are as diverse as the watersheds they inhabit. No single program or educational curriculum will meet the needs of all or even most of the target audiences across the MARB, but **programs and services will have broader applicability if they can be adapted to local conditions.** For example, educational programs in watershed leadership could be offered in modular format so that participating farmers or farm advisors could complete only those modules appropriate to their particular leadership role and level of experience.

- There are many educational programs throughout the MARB aimed at improving leadership capacity for watershed management. While the educational needs of farmer audiences are not the same as more generalist watershed practitioners, there is certainly much overlap, particularly in terms of organizational leadership and communication skills. **Service providers should explore opportunities to adapt existing educational programs** to address the needs of farmer and farm advisor watershed leaders.

MECHANISMS TO ESTABLISH AND SUPPORT SHARED LEADERSHIP AT THE LOCAL, STATE, AND REGIONAL LEVEL

- Farmer leadership of watershed initiatives is not new but is also not widespread. This report did not uncover any collaborative learning networks in the MARB specifically dedicated to farmer-led watershed initiatives. Farmers and the individuals and institutions who support them in watershed leadership might benefit from **a platform or forum for sharing experiences and lessons learned.**

- Resources are needed to facilitate local, state, and regional support for farmer and advisor leadership. **Public and private funding strategies, communication network development, and farmer and advisor leadership training and ongoing support** are all necessary elements to establish, strengthen, and continue shared leadership.

RESEARCH NEEDS

- More study is warranted on the **role of farm advisors as leaders of watershed initiatives.** Private sector advisors are particularly underrepresented in the literature in terms of their existing and potential role in watershed projects.

- More research is warranted to identify **similarities and differences in the knowledge and skills required of participants in farmer-led watershed initiatives and other watershed practitioners.** This research would help service providers more effectively address the needs of farmer-led watershed initiatives.

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