



A Framework for Farm-Level Sustainability Projects

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Acknowledgements

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Partners

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- Lafayette Ag Stewardship Alliance
- University of Wisconsin – Madison Division of Extension
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- Southwest Wisconsin Technical College

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Terminology

1. **Metrics:** categorical indicators used to rate an entity, system or process in relation to others of similar character
2. **Precision agricultural decision support system:** technological systems used to assist users in making well-informed decisions regarding agricultural activities that are complex and nuanced and change over time and space
3. **Proof-of-concept:** pilot project for the employment of a framework as a means for testing workability and determining future revision
4. **Soil health:** the condition of the soil associated with the ability to support high levels of biological activity and withstand extreme meteorological events
5. **Sustainability (sustainable agriculture):** Field to Market: The Alliance for Sustainable Agriculture defines sustainable agriculture as meeting the needs of the present while improving the ability of future generations to meet their own needs by:
 - Increasing productivity to meet future food, feed, fiber and fuel demands
 - Improving the environment
 - Improving human health
 - Improving the social and economic well-being of agricultural communiti



Framework Purpose

Farmers face mounting challenges to:

1. Operate in challenging financial and economic conditions
2. Satisfy the on-farm sustainability demands of consumers
3. Meet local environmental regulations

This framework outlines a project-based approach for farmers, other businesses as well as conservation professionals and organizations within a region to collectively address these challenges. The approach combines financial and environmental factors to tackle these challenges. This framework is for use by various groups throughout the Upper Midwest and beyond. It is intended to serve as a durable approach to establishing agricultural sustainability projects. Projects implemented through this framework will communicate the sustainability of farming practices to consumers, the agricultural supply chain and regulatory agencies. This vision will be accomplished by documenting the continued progress made by farmers using sustainability metrics, financial indices and environmental assessment tools to estimate benefits of conservation practices to local water and land resources.

Viable conservation practices contribute to sustainable farming and to the overall success of a farming enterprise. On-farm conservation practices have the potential to not only produce a financial and economic benefit, but an environmental improvement as well. This framework is intended to utilize new and existing technology for assessing the sustainability of on-farm practices. The goal is to provide a summary of the benefits of current conservation practices, as well as to create opportunities for further farm-specific conservation discussions.

This framework utilizes expertise from a range of public and private partners. This partnership consists of farmers, entities from local government, private industry and academia. This framework can be used to establish agricultural sustainability projects that are consistent with existing sustainability programs and local regulatory guidance.



This framework is being tested under a pilot project with Farmers for Sustainable Food and a group of conservation-minded dairy, hog, beef and crop farmers in southwestern Wisconsin.

Introduction

Farmers for Sustainable Food is a collaborative, non-profit organization that provides resources, advocacy, support and empowerment for farmers who are innovating and demonstrating sustainable farming practices. FSF connects farmers, processors, environmental groups, scientists, food companies, community leaders and ag businesses to share ideas and collaborate on projects.

FSF was established in 2016 and supports farmer-led watershed conservation initiatives throughout Wisconsin, with potential for growth in other states. These non-profit organizations foster innovation and shared learning among members to bring about continuous measurable improvements in areas such as water quality, soil health and groundwater.

The farmer-led groups focus on ways to prevent and reduce runoff from farm fields and farmsteads, helping to both retain soil in the field where it belongs and ensure cleaner lakes, streams and groundwater. Some of the methods farmers use include planting cover crops, conservation tillage and no-till planting, soil testing, low-disturbance manure application and nutrient management planning. Many participate in on-farm research as well as emphasize community outreach and education through field days and workshops.

Farmers for Sustainable Food is driven primarily by the Dairy Business Association, Edge Dairy Farmer Cooperative and The Nature Conservancy.



Projects pursued through this framework should strive to add value to the farmer and the agricultural supply chain overall, while seeking improved environmental outcomes.

Water quality, consumer demand for sustainably sourced products, and government regulations are important issues within the agricultural industry. In response to these issues, farmers and partners are striving toward continuous improvements through the use of on-farm conservation assessment tools. Some of these tools are proprietary while others are freely accessible to the public. Most tools require input of on-farm data, which can be done through an online application or software program. These tools are designed to serve as a means of communication up the agricultural supply chain.

FSF is conducting a proof-of-concept (POC) project in southwestern Wisconsin to pilot the use of this framework. This POC project will be conducted in collaboration with the Lafayette Ag Stewardship Alliance (LASA), a farmer-led watershed conservation group formed in 2017 to identify and promote conservation practices in southwestern Wisconsin. In addition, this POC project will be used to inform future enhancements to this framework.

Focus Areas

Finance and Economics



The agricultural industry often faces challenging financial and economic conditions. Amid these challenges, there are ongoing pressures to produce improved environmental outcomes. Research indicates conservation practices that can lead to improved environmental outcomes may also have positive or neutral effects on farm finances and economics. However, there is a lack of data to demonstrate on-farm feasibility.



We refer to economic issues as those associated with farm profitability in relation to the adoption of conservation practices along with the risks associated with these changes. We use the economic condition to describe the effects of conservation on market conditions within a region (e.g. whether there is a financial incentive for an agricultural product produced with better environmental outcomes). In general, economic conditions can be more challenging to assess with on-farm data alone. Projects using this framework may explore economic issues but will focus primarily on financial conditions.

Conversely, we refer to financial issues as those that affect on-farm profitability, such as factors that impact income, expenses, worth and profit. A farm budget analysis can help farmers better understand their financial performance relative to the costs and benefits of conservation practices. It is important to evaluate financials across practices and over time to understand and realize the long-term benefits of conservation. Conservation has the potential to increase farm profits through reduced inputs, reduced labor, improved farm resiliency, increased yields and improved soil health. A comprehensive analysis can be used to assess the value of conservation. The information obtained from the analysis can then help farmers determine which types of practices give the largest return on their investments.

Several partners would be well suited to work with when creating a full farm financial analysis. This may include members of agricultural financial institutions, university extension systems or farm business advisers. Members of these entities often utilize software programs for efficiently collecting, calculating and assessing the necessary budget information.



Environmental

This framework is separated into two environmental analysis categories:



On-Farm Sustainability – on-farm metrics that relate to current and future environmental outcomes (e.g. greenhouse gas emissions or soil erosion)

Local Resources – the condition of local environmental resources that may be tied to government and non-governmental programs that look at surface water, groundwater and fish and wildlife habitat.

These categories are described in more detail below.

Sustainability

In general, sustainability programs seek to maintain or increase farm productivity while continuously improving environmental outcomes. There are many ongoing efforts to develop definitions for and programs to manage agricultural sustainability. This framework references existing sustainability efforts where partners have developed on-farm metrics for quantifying the relationship between farm management and environmental outcomes. Projects implemented through this framework will utilize existing sustainability programs that fit the goals and objectives of the partners involved in the project.

Various data management and assessment programs are available to assist farmers in evaluating their farm sustainability. Depending on project partners, there are numerous farmland management programs supported by private industry, non-profits and public institutions that can collect and analyze on-farm data against various sustainability metrics, such as energy use, water quality and greenhouse gas emissions.



Local Resources

Farming communities have local resource issues, such as drinking water supplies, recreational lakes, adequate drainage or permit requirements for farms, that are not typically addressed by sustainability programs. Projects conducted through this framework may also address issues such as these in addition to on-farm sustainability issues. In general, actions taken to improve sustainability outcomes can also assist with local resource issues and vice versa. However, the tools needed to address local resource issues will likely differ from the tools and software used to understand on-farm sustainability metrics.

There is a need to connect on-farm practices to local water resource conditions. Numerous entities are keenly interested in how land-use decisions have affected water resources and how conservation practices can play a role in a mitigation of these effects. It is important to demonstrate improvements to these entities and government agencies and to be able to answer the question, “Are water resources being improved?”

As an optional add-on for sustainability projects, there are tools that can assess the impact of conservation practices on the local environment and be paired with other sustainability outcomes. These tools can evaluate the condition of nearby waterways, biological health and/or fish and wildlife habitat. Similar to assessing on-farm sustainability metrics, numerous public, non-profit and private tools can assess land use and land management decisions and predict their impact on water and land-related resources at both watershed and field scales.



Establishing Projects

This section describes the steps needed to establish an agricultural sustainability project in other locations. These steps are repeatable and generally universal, minus small changes depending on the focus area, issues and groups. A more detailed list of project sub-steps with an associated purpose and outcome is provided in **Appendix A**.

1. Engagement



- Gather key project partners
- Develop a project idea
- Identify existing complementary programs and projects
- Gauge local interest

2. Formation



- Obtain funding
- Establish local leadership and advisory teams
- Refine project goals and purpose
- Recruit farmer participants

3. Operation



- Hold meetings
- Collect data for economic, sustainability and local resource assessments
- Analyze data and develop conclusions
- Hold local farmer workshop

4. Conclusion



- Report results to stakeholders and broader audiences
- Continue project for additional years



Continuation of Projects

This framework document describes the steps and activities that would typically occur during the planning, initiation and one-year implementation and reporting. It is widely recognized that to show improvement in all of the sustainability metrics and outcomes over time, a project should strive to be implemented for three to five years. A project implemented over a longer period of time will be better positioned to show that improvement in sustainability metrics, farm financials and local resources are indeed happening.

A longer project period provides added benefits:

- Increasing dialogue and information sharing between farmers in project area
- Increasing time for farmers to interact with local resource professionals to assist with planning and implementation of new conservation practices
- Improving the on-farm financials of conservation systems
- Substantiating sustainability claims with sufficient data
- Communicating the sustainability of farming practices to consumers, the agricultural supply chain and regulatory agencies



Operating Projects

This section describes the steps that could be taken to provide information on how on-farm decisions impact farm financials, sustainability and the local environment. It describes tools that could be used as part of each analysis.

Financial Analysis

The financial analysis for the projects implemented through this framework will be based on a farm budget assessment or farm enterprise analysis. Farm budget categories that may be evaluated include revenue, internal feed cost, internal feed value, external feed costs, crop yield, commodity price, variable costs and fixed costs. Important outputs will include a display of categories where current practices are cutting into or, conversely, boosting revenue and/or overall profit.

The purpose of the financial analysis is to develop sufficient information to compare farm management decisions to impacts on on-farm profits and environmental outcomes. This may be done at the level of the individual farmer but also, possibly, based on the set of aggregated data. It may also be used to identify areas of potential future profitability increases.

There are several software programs available to create a farm or enterprise budget analysis. One public option in the Upper Midwest is FINPACK. Developed by the University of Minnesota, FINPACK is considered the premier farm financial management program and is used to help farmers better understand and manage their farm finances. Access it at <https://finpack.umn.edu/>.

Environmental Analysis

Farm-Level

The sustainability analysis for projects should consider using a tool or technology from an existing sustainability program. The tool or technology selected for a project conducted under this framework should address the environmental goals and objectives of the project partnership using established methods. It should have the capacity to



estimate sustainability for several on-farm metrics, such as soil condition and land use. Ideally, it would have built-in capacity to compare the individual results to that of some population benchmark. Examples of established on-farm sustainability tools:

- Fieldprint® Platform (<https://fieldtomarket.org/our-programs/leading-with-science/fieldprint-platform/>)
- 4Rs program (<https://nutrientstewardship.org/4rs/>)
- Minnesota Agricultural Water Quality Certification Program (<https://www.mda.state.mn.us/environment-sustainability/minnesota-agricultural-water-quality-certification-program>)
- FARM Environmental Stewardship: <https://nationaldairyfarm.com/dairy-farm-standards/environmental-stewardship/>

A list of other sustainability tools can be found in the Trust in Food 2020 Report “Farmers Perspectives on Data” (**Appendix B**).

Local Environment

The local environmental analysis for a sustainability project should focus on assessing local or watershed resource concerns, such as surface water quality, groundwater quality/quantity or fish and wildlife habitat. Projects should utilize tools capable of documenting the relationship between upstream conservation and downstream resources. An example would be estimating the reduction of sediment delivered to a local recreational lake resulting from on-farm conservation practices. The selected tool or method must be capable of estimating the sediment and nutrient removal benefits of conservation practices that are, or could be, placed on the landscape. Ideally, the tool should also be able to inform participants on opportunities for future conservation efforts. Examples of local environmental analysis tools:

- BasinScout Platform: <https://basinscout.org/>
- Prioritize Target and Measure Application (PTMApp): <https://ptmapp.bwsr.state.mn.us/>



Assessment Combinations

Projects conducted under this framework will address at least one aspect of financial character and at least one component of environmental issues. Partners may choose to address only sustainability issues or local resource issues. They may also address sustainability and local resource issues in tandem following the framework.

A combined assessment can be used to measure where the project area is on the sustainability curve in comparison to other areas.

Outcomes

Desired outcomes for a project implemented through this framework should be developed as part of the project initiation process. Listed here are several financial, economic and environmental outcomes that can be included in a project:

- Show that current conservation efforts are having a positive impact on on-farm sustainability metrics and water quality
- Demonstrate the financial benefits of conservation work done on the farm
- Provide support to farmers pursuing conservation on their land
- Demonstrate to farmers and others that improvements in the environment can result from farm management decisions, such as using soil health practices (cover crops, reduced tillage, diverse crop rotations) and improvements in fertilizer/manure management
- Engage more people in conservation, including non-operator landowners so they understand farm conservation practices
- Increase engagement and landowner involvement in conservation groups and studies
- Create a positive and meaningful experience for farmers with regard to engaging public and private entities in conservation



Appendix A

Detailed Guidance for Establishing Projects

1. Engagement

Gather Key Project Partners:

- A small group of farmers, agricultural industry representatives, non-profit conservation organizations that have a sustainability focus, and local conservation professionals (conservation district, crop advisers, university extension)
- Establish an area of interest for developing a sustainability project where there is also a desire to scale up adoption of conservation practices
 - ✓ Generally, an area with conservation-minded landowners
 - ✓ A group of fewer than 50 landowners preferred for management ease
 - ✓ An area with a farmer-led conservation group in place, a small drainage area with a significant resource issue or concern or a group of farms supplying an agricultural processor
- Determine if there is technical and leadership capacity within the project area to successfully lead and carry out the project
 - ✓ Need someone connected to the area and the people willing to do boots-on-the-ground work in the form of individual farmer meetings. This could be staff from a conservation district, non-profit conservation organization, crop consultants, retired farmer, etc.
- **Purpose:** Build adequate capacity to support project implementation
- **Outcome:** Local ownership, leadership and implementation

Develop Project Idea

- Outline the purpose, issues and goals
- Identify the natural resource concerns
- Select assessment tools



- **Purpose:** Create a clear understanding and unanimous support for direction
- **Outcome:** Agreed upon scope and outline

Identify Complementary Projects/Programs

- Investigate/research what has been or is currently being done in the area of interest or, more broadly, the state or region to capitalize on existing efforts and programs while avoiding duplication of efforts
- Determine what laws and/or rules that are currently in effect that impact how agricultural practices are conducted in your area of interest
- Contact leads from complimentary programs/projects to discuss collaboration
- Engage related public and private groups for further involvement/support
- **Purpose:** Gain additional support and broaden understanding in the community of goals/purpose
- **Outcome:** Fully formed professional team that leverages other efforts to maximize participation, technical and financial resources, and impact of project

Gauge Local Interest

- Contact individual farmers/landowners within the area of interest to introduce the idea and determine interest
 - ✓ This should likely be done through the local government unit (LGU) or private partners who have direct contact and trust with the landowners in the area
- If less than 50 percent of landowners in the area or members of the farmer-led group are interested and willing to participate in the project, consider investigating another area of interest
- **Purpose:** Assure that this is a good area for a project
- **Outcome:** Establish a targeted area where success is likely



2. Formation

Obtain Funding

- Determine key funding sources
 - ✓ Explore both traditional and less-conventional sources of funding (Public sources may include local, state and federal grants.)
 - ✓ Explore whether local and state agencies can contribute in-kind support for the project areas such as data collection and data entry for assessment
 - ✓ Pursue funding from private sources like ag businesses foundations or small grant programs. Some businesses may also have local staff that might contribute in-kind support
 - ✓ Private non-profit organizations can be a source of both cash and in-kind staff time
- Apply for funding
 - ✓ Work with project partners to develop the application materials or letters of request
- **Purpose:** Obtain financial support for at least two-thirds of project tasks
- **Outcome:** At least one year of project funding

Establish Local Team

- Develop local stakeholder list
 - ✓ This list is likely best developed by the project leader along with any project partners
 - ✓ Include farmers, landowners, conservation professionals and other local groups with a vested interest in project
 - ✓ Collect names, phone numbers, mailing addresses, email addresses
- Establish key stakeholder group
 - ✓ Refine list to those who want to be involved on an ongoing basis to be the trusted advisers and champions
 - ✓ If known, note the level of involvement each person is willing to commit



- **Purpose:** Gain local support
- **Outcome:** Fully formed local team

Refine Project

- Refine the project to get buy-in from all parties
- Define tasks, actions and responsible parties
- Determine which tools/methods will be used in the assessment
- Establish desired outcomes
- Determine if use of consultants is necessary
- **Purpose:** Come to a consensus on direction and mode of execution
- **Outcome:** Fully formed project concept



3. Operation

Meetings

- Initial meeting with project partners
 - ✓ Build familiarity with project scope, deliverables and assessments/tools/models
- Individual farmer meetings
 - ✓ Collect and enter farmer financial and land management data
 1. Use pre-meeting survey to understand and engage farmers to get information on their perspectives about conservation
 2. Use worksheets to collect farm data that will be required for selected financial and/or environmental tools
 3. Evaluate what farm management programs, precision farming tools or other certification tools might already be in use and determine ability to transfer required data to the assessment tools
 - ✓ Meet with farmers in person to review worksheets and enter data into assessment tools
 - ✓ Provide a project contract to each farmer which assures that data and individual farm assessments/analyses will be kept confidential and only aggregated data will be made available unless the farmer agrees to release information
 - ✓ Provide documentation of assessment/analysis to the farmer either at the meeting or shortly after. Ideally, this should include discussion on how changes in management or adoption of conservation practices influence the assessment scores either positively or negatively.
 - ✓ Conduct follow-up meetings to discuss interest or opportunity to work with the farmer to plan and implement new conservation practices
- **Purpose:** Execute the financial and sustainability portions
- **Outcome:** Aggregated financial and sustainability results



Additional Data Collection (Local Environment)

- If the project incorporates a local environmental analysis, collect any other necessary data
- Consider the use of third-party contractor or local GIS expert. They will be needed because local environmental analyses are likely to utilize physical-based, GIS software programs or tools capable of analyzing landscape variables to quantify processes that impact water quality.
- **Purpose:** Execute the local environmental analysis
- **Outcome:** Local environmental results

Analyses

- Once data is collected and assessment tools have been run for participating farms, the project will move into the phase of analyzing the information and summarizing it in relation to project outcomes in summary form. Individual assessments:
 - ✓ Financial
 - ✓ Farm-Level Sustainability
 - ✓ Local environmental
- Complete overarching assessment that ties individual assessments together showing where participating farms and the project are at collectively in demonstrating sustainability.
- Consider comparing farmer results to conventional farms in a similar area. Several of the tools that can be used to develop project-specific analyses are also able to compare those results with state, regional, or national data.
- **Purpose:** Interpret results
- **Outcome:** Important findings regarding impacts of conservation practices, including trends and correlations

Host Workshop for Farmers and Key Partners

- Review results from analyses
- Discuss implications
- Provide suggestions for future direction
- Answer questions from farmers
- Connect farmers to more resources
- **Purpose:** Share findings with farmers and key partners
- **Outcome:** Understanding of the analyses



4. Conclusion (Year 1)

Reporting

- Create and distribute project report with aggregate information:
 - ✓ Introduction and background
 - ✓ Describe methods
 - ✓ Document results and findings
- **Purpose:** Share findings with broader public
- **Outcome:** Project area condition report

4. Conclusion (Years 2-5)

- **Purpose:** It is widely recognized that to show improvement in all of the sustainability metrics and outcomes over time, a project should take place for three to five years. A project implemented over a longer period of time will be better positioned to show that improvement in sustainability metrics, farm financials and local resources is indeed being achieved.
- **Outcome:** Projects conducted over multiple years provide the added benefit of:
 - ✓ Increase dialogue and information sharing between farmers in project area
 - ✓ Increase time for farmers to interact with local resource professionals to assist with planning and implementation of new conservation practices
 - ✓ Improve the exploration of on-farm economics of conservation systems
 - ✓ Substantiate on-farm sustainability claims through data
 - ✓ Communicate the sustainability of farming practices to consumers, the agricultural supply chain and regulatory agencies



Appendix B

Useful Sustainability Resources

- Environmental Defense Fund (EDF). 2019. How conservation makes dairy farms more resilient, especially in a lean agricultural economy.
<https://www.edf.org/sites/default/files/content/how-conservation-makes-dairy-farms-more-resilient.pdf>
- Purdue University. 2016. Social Science Evaluation Report, Fieldprint Calculator Project: Big Pine Creek Watershed, Benton County, IN and Indian Creek watershed, Livingston County IL. https://www.purdue.edu/fnr/prokopy/wp-content/uploads/2014/06/Fieldprint_Final_Report_20170321.pdf
- Trust in Food (Farm Journal). 2020. Farmer Perspectives on Data.
https://www.trustinfood.com/wp-content/uploads/2020/05/Farmer-Data-Perspectives-Research_final.pdf

