



## Discovery Farms Request for Collaborations and Partnerships

### *Developing local partnerships for edge of field water quality monitoring*

Discovery Farms® (DF), within the Division of Extension at UW-Madison emphasizes farmer leadership to select and conduct studies on private farms across the state of Wisconsin to better understand the relationships between agricultural practices and water quality. Since 2001, DF has been a source of credible water quality information for farmers and farm advisors, agency personnel, researchers, and interested stakeholders in Wisconsin and beyond.

This is an invitation to groups with an interest in agriculture and water quality in the state of Wisconsin to develop and submit a proposal to work in partnership with DF. Proposals should explore an idea or practice on at least one farm with the intent of reducing nitrogen, phosphorus, and sediment loss to surface water via **surface runoff and/or tile drainage** while maintaining crop productivity. DF will supply research equipment, sample analysis, US Geological Survey monitoring and data management, and outreach support, while the local partner will help identify participants and supply staff time and travel for monitoring fieldwork.

### Why this Request?

The DF Steering Committee has decided to offer this Request for Collaborations and Partnerships in order to expand the DF research program and continue building local partnerships across the state.

Since 2018, DF has partnered with local organizations to develop research projects and maintain field sites. DF staff work closely with local partners on matters related to the monitoring stations, while also creating the educational materials, working directly with farmer participants, and growing available information for Wisconsin farmers related to water quality impacts of agricultural management.

### Who can apply?

Groups that have an interest in agriculture and water quality. This can include but is not limited to: county partners like agency personnel, non-profit or non-governmental groups and associations, farmer-led watershed groups, or any combination of the above. Priority will be given to proposals for monitoring innovative in-field and/or edge-of-field management practices. See “DF priority categories” section below for more information.

*Applicants **must** have capability to share project responsibilities or costs as described below.*

### Selection of proposals for projects

After a proposal is submitted, the group will be contacted by DF staff to arrange an introduction and interview phone call to gather more information and talk through the details of the application. Those proposals that meet qualifications will be asked to make a presentation to the DF Steering Committee for a decision on which projects will be pursued in 2025. The DF Steering Committee will judge by project content, experience of partner, feasibility, priority, and ability to fund staff time and travel for monitoring efforts and site maintenance.

### Due date: February 1, 2025

Submit proposals to Lindsey Hartfiel, [lindsey.hartfiel@wisc.edu](mailto:lindsey.hartfiel@wisc.edu), Discovery Farms.

For questions or comments, please contact: Lindsey Hartfiel, [lindsey.hartfiel@wisc.edu](mailto:lindsey.hartfiel@wisc.edu), 715-571-0746. DF staff will also be available at the WWASH Conference to answer questions.

## Proposal procedure

Format: 2-page maximum length

Requirements:

- Study objectives/goals
- Study design (number of sites and/or participants). Submit the names of at least three farmers who have agreed to participate to provide several options for site assessments
- Description of local partnerships and roles of each partner
- Names, roles and contact information of personnel that will complete partner responsibilities as identified in section, “Required responsibilities for partner”
- Ability to perform partner responsibilities (defined below)
- Any proposed changes to responsibilities of DF (defined below)
- How your project addresses the priority areas for DF research
- Interest or ability to seek joint funding sources to support future years of project
- GIS analysis of basin size for identified potential sites to aid in assessment of the topography and drainage areas (See “Ideal monitoring site conditions” for more information)

## DF priority categories

At this time, DF is seeking proposals with research questions that can be assessed through edge-of-field monitoring of surface runoff or tile drainage. See “Additional information” section for list of soil and water constituents that can be monitored through these projects. In addition, project proposals should include at least one of the following DF research priorities and study design considerations. If you hope to include additional priorities for research beyond water quality or alternative study designs in your proposal, please consult with DF staff prior to submission.

- Innovative practices that address one or more of the following:
  - Soil loss and erosion control
  - Phosphorus loss
  - Nitrogen loss to surface waters
  - Treatment of tile drainage
  - Manure management (e.g., comparison of application techniques, manure processing)
  - Soil health impacts on water quality
- Preferred study design options (choose from one of the below):
  - Ideally 2-3 sites within the project area (ideally located within 10 miles of each other) to monitor that would allow for a before/after assessment of a management strategy or conservation practice **or** paired basin monitoring to compare effectiveness of a practice or management strategy
  - Opportunities to pair surface and tile monitoring within the same field are also an ideal study design

## Preferred components of proposals

DF staff and Steering Committee will choose one project area (ideally within a 10-mile radius) and install up to three sites total within the selected project area. Proposals that have the following components will be given preference:

- Ability to study novel or innovative practices
- Emphasis on priority categories
- Several potential sites identified. There are many factors that are needed to make a site suitable for edge-of-field monitoring. Several potential options that DF could further explore for suitability are preferred. See “Ideal monitoring site conditions” for more information
- Diverse partnership in place with existing staff to manage responsibilities
- Proven record of outreach and engagement with stakeholders
- Availability of suitable sites (after in-person evaluation)
- Ability to demonstrate history of project partner’s working relationship with participating farmers

## Additional information

### Required responsibilities for partner:

- Relationship with farmers hosting monitoring equipment or project
- Assist with site installation
- Sample collection
  - A minimum of two individuals that will be trained by DF to collect samples
    - At least one must be available when runoff is expected, especially during spring snowmelt.
  - Some after hours, weekend or holiday collection may be required
- Site maintenance
  - Biweekly to monthly site visits to trim grass around site and inspect equipment and earthen berm for rodent or other damage
  - Shovel snow and/or melt ice in flume prior to snowmelt event in spring
  - Other visits may be requested to verify or troubleshoot items at the site (e.g., check batteries, verify stage level in flume, adjust site cameras, etc.)
- Assist DF or USGS staff on site upon request.
- Collect agronomic data from farmers
- Planning and hosting educational events
- Cover salary and travel expenses related to duties
- Annual time commitment estimate: 100-200 hours annually (includes monitoring site visits, maintenance, and agronomic data collection)

### Required responsibilities of DF:

- Relationship with farmers hosting monitoring equipment
- Provide monitoring equipment
- Installation of equipment
- Train partner staff to collect samples and maintain sites
- Cost of US Geological Survey for site management and database services
- Cost of sample analysis
- Housing data collected in existing DF database
- Analyze data, provide annual data report to partner and participating farmer
- Create materials for annual educational event
- Co-host educational events, present information, help coordinate speakers, and materials

### Traditional monitoring parameters and constituents

DF, in collaboration with the US Geological Survey, specializes in monitoring soil and nutrient loss via surface water in diverse landscapes throughout Wisconsin. Monitoring efforts will focus on edge-of-field surface runoff and/or agricultural tile drainage for the following constituents:

- Suspended Sediment
- Total Kjeldahl Nitrogen
- Ammonium-N
- Nitrate/Nitrite-N
- Total Phosphorus
- Dissolved Phosphorus
- Chloride
- Total Nitrogen (calculated)
- Organic Nitrogen (calculated)
- Particulate Phosphorus (calculated)
- Runoff/Drainage volume

### Other parameters monitored

In addition to surface water monitoring, DF typically monitors local physical and meteorological conditions to evaluate runoff events including:

- Precipitation
- Air temperature
- Soil temperature (at various depths)
- Soil moisture (at various depths)

Nutrient assessment of soil, applied manure and soil amendments, and cover crop biomass testing are commonly performed to determine nutrient inputs, availability and cover crop effectiveness.

Testing may include:

- Routine soil tests (pH, organic matter content, soil test phosphorus and potassium)
- Incremental depth soil tests (0-1 inch, 1-6 inch)
- Soil nitrate tests - Pre-Plant (PPNT) or Pre-Sidedress (PSNT)
- Manure and other soil amendment tests
- Cover crop biomass and nutrient content tests

Comprehensive agronomic and field management records will be collected from all land within monitored basins. Collected information will include detailed cropping, nutrient application, tillage, and field management data.

### Ideal monitoring site conditions

For ease of linking water quality information with land management, the most suitable basins for monitoring include:

- A single field
- Basin size of 10-40 acres
- Easy access and proximity to power (near lines or buildings)
- All land in the basin under control of participant
- Cooperative and good recordkeeping participant
- Appropriate slope away from surface site or clear discharge path for tile

Although it is often difficult to find all of these targeted site criteria at a single site, priority will be given to prospective sites and projects that meet the majority of these criteria.



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