

# **Whole Farm Participatory Research**



## **Recommendations from the Monitoring Project Team**

A Publication of the  
Biological, Financial and Social Monitoring Project  
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## Monitoring Project Resources

*Close to the Ground*  
(the video cassette)

*Close to the Ground*  
(the quarterly newsletter)

*The Monitoring Tool Box*

*Whole Farm Participatory Research:  
Recommendations from the Monitoring Project Team*

*Monitoring Sustainable Agriculture with Conventional Financial Data\**  
by Dick Levins

\* This publication is included as a chapter in *The Monitoring Tool Box*



*Whole Farm Participatory Research: Recommendations from the Monitoring Project Team*, is a Land Stewardship Project (LSP) Publication. LSP is a private, nonprofit organization devoted to fostering an ethic of stewardship for farmland, promoting sustainable agriculture, and developing sustainable communities.



The Monitoring Project was made possible in part because of the funding and continued support of the Minnesota Institute for Sustainable Agriculture (MISA). MISA seeks to enhance the health of agriculture and rural communities by building partnerships and linkages among individuals and groups with diverse backgrounds and interests.

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# Introduction

The Biological, Financial, and Social Monitoring Project, which ran from 1993 through 1997, was a multi-disciplinary agricultural research project convened by the Land Stewardship Project of Minnesota.

The Monitoring Project's central focus was to explore the impact of a particular management tool—management intensive grazing—on the ecological, financial and quality of life concerns of its six participating farm families. In particular, the Project sought to identify indicators, or tools, a farm family could use—either on their own or together with other farmers or resource professionals—to monitor progress toward their goals in these three areas of concern.

The core group of twenty-six people that undertook this exploration included the six farm families as well as university researchers, state and federal natural resource agency personnel, private consultants and nonprofit organization staff. The Monitoring Team also consisted of a diverse mix of disciplinary perspectives including ecology, rural sociology, hydrogeology, soil science, fish and wildlife and agricultural economics.

## Whole Farm Participatory Research

As the Monitoring Team came together to develop the details of this research project, an additional focus emerged: to develop a new dynamic process for doing agricultural research called *whole farm participatory research*. The Monitoring Team defines this new process as follows:

**It is farmer driven.** This simply means that the questions and management concerns of the farmers determine the overall context of the project. As the team comes together within this larger context, the actual focus of the research evolves to include the concerns of all team members.

Being farmer driven also means paying close attention to the farmers' concerns and on-farm observations when analyzing the project's research data. In the final integration of the research data, that data's meaning is always tied back to the context of real farms.

**It is participatory and team-based.** In this process, everyone involved participates as equals: farmers, scientists, agency personnel, nonprofit and private sector representatives and project staff. This means that each person's knowledge, experience and input is valued at all phases of the project.

Being team-based means that all those involved in the project commit to a shared vision or goal that is larger than any of their individual concerns. To build this commitment, the team engages in a goal development process in which all the participants are able to voice their individual goals and interests. From this dialogue, the larger team vision or goal emerges.

**It uses a whole systems approach.** In whole farm participatory research, a farm is viewed from a holistic and interconnected perspective. While various biophysical, economic and social components of the farm are singled out for study, team members see that these components are part of a larger whole. They also recognize that these components are interconnected and affect each other—some more obviously than others.

Respectful, open dialogue among team members underpins this holistic approach, as does a commitment to integrate on-farm observation and monitoring with scientific data collection and analysis.

### *The Main Goals of the Monitoring Project*

1. Develop and test a process of on-farm observation and interaction that brings together farmers and other professionals to monitor ecosystem health, economic sustainability and social well-being of the farm family.
2. Implement a new dynamic process for designing agricultural research that:
  - is participatory and farmer driven,
  - uses a whole-systems approach that depends on a dialog among all team members,
  - values and develops on-farm knowledge and experience, and
  - fosters changes in research approaches by all project Team members and their institutions.
3. Engage farmers, researchers, the public, agency officials, private businesses, and others in feedback and application of on-farm monitoring and whole-systems participatory research.

## *The On-Going Experiment*

In Minnesota, the invitation to further the use and development of a whole farm participatory approach to on-farm research has been taken up by the Sustainable Farming Systems Project, originally funded in 1997 by the State of Minnesota’s Legislative Commission on Minnesota Resources.

The Sustainable Farming Systems Project researches farm sustainability as reflected by farm economics, environmental impact (particularly water quality), and the quality of home and community life. The Project is a farm-centered, team-driven partnership of farmers, scientists, extension educators and nonprofit, private-sector and government representatives.

Integrated efforts occur in three Minnesota regions: the Chippewa River Valley in the west-central part of the state, the Sand Creek Watershed south of Minneapolis, and the Coteau Ridge and Lamberton areas in southwest Minnesota. The mission of the Project—to promote whole farm stewardship and rural community health over time—is expressed by each team through on-farm research, public outreach and individual activities.

## An Open Invitation

For many on the Monitoring Team, being a member meant stepping out of their traditional modes of operating within their own professions and adopting new ways of interacting with their fellow team members. Additionally, Team members sought to foster changes within the institutions or professional fields they represented and among their peers. At times both of these endeavors proved to be risky, not to mention challenging, undertakings. However, for the vast majority of Team members, the rewards that came with their participation in the Project far outweighed the risks and challenges.

In this spirit, the Monitoring Team, through its various publications, hopes to encourage farmers, university scientists, public agency personnel, nonprofit organizations and others to participate in on-farm monitoring projects and to use a whole farm participatory approach to research whenever appropriate.

- ◆ The video *Close to the Ground* presents an overview of the Project’s purpose and goals and features team members sharing their insights and experiences from their participation in the Monitoring Project.
- ◆ *The Monitoring Tool Box* offers farmers and other resource professionals a hands-on, user-friendly collection of on-farm monitoring tools. These tools can be used to monitor the impact of on-farm management decisions on ecosystem health, farm finances and farm family quality of life. They are most effective and meaningful when used to track progress toward holistic goals and objectives. The quarterly newsletter, also called *Close to the Ground*, keeps *Tool Box* users and others “up-to-date on the art and science of on-farm monitoring.”
- ◆ The report at hand focuses on the Monitoring Team’s recommendations to those interested in furthering the development and use of the whole farm participatory research process.

While the Team fully recognizes the need for other forms of agricultural research that are not whole farm nor participatory, it firmly believes that, at this juncture in time, more participatory, holistic research is required in order to develop appropriate alternatives to industrial and corporate models of food production. Monitoring Team members are eager to dialogue and work with those willing to explore on-farm monitoring and whole farm participatory research so as to encourage their further development and use.

# Project Background

A brief summary of how the Monitoring Team—and the Project itself—came together reveals the determining role these originating circumstances played in the overall focus and design of the Project, including the development of the whole farm participatory research process detailed in this recommendations report.

## Land Stewardship Project's Work with Farmers

Land Stewardship Project's experience with on-farm participatory research stretches back to the late 1980s. This approach seeks to bring farmers and persons with expertise in a particular subject area together in an environment that respects and makes use of the knowledge and skills of each participant. The intent of on-farm participatory research is to provide the farmer with verifiable and practical information as well as tools and practices that fit into their management system. It also respects the fact that only the farmers themselves can decide what is appropriate for their farms.

### Management Intensive Grazing

As part of its on-farm research work, LSP helped farmers in southeast Minnesota explore the advantages of using *management intensive grazing* within their livestock enterprises.

Management intensive grazing is a system of grazing in which a pasture is divided into smaller sections, called *paddocks*, usually with the use of temporary electric fencing. The use of paddocks gives the farmer a way to control both the amount of time the grazing animals are in a designated area and the amount of time the plants have to regrow before the animals are returned to that area. Both factors are important to animal performance and to the overall health and productive capacity of the pasture. This system of grazing usually involves more hands-on management—hence the term “intensive”—than the typical system in which the animals are simply turned out into a large area of pasture and allowed to continuously graze throughout the growing season.

Land Stewardship Project's work with management intensive grazing, which included on-farm research studies and two-day “how to get started” workshops, led a number of area farmers to incorporate this grazing system into their farming operations. It also brought the organization in contact with area farmers who had been using management intensive grazing for several years already. Land Stewardship Project provided opportunities for these new and experienced graziers to connect with and learn from each other by sponsoring events such as field days. These efforts established a context for dialogue and exploration of questions and concerns for the graziers.

### Holistic Management

The other major influencing factor that led to the formation of the Monitoring Project was the series of classes LSP staff taught on Holistic Management. Holistic Management is a practical approach to whole farm management developed by Allan Savory of the Center for Holistic Management based in Albuquerque, New Mexico. The practice of Holistic Management starts with five basic steps. The steps outlined below come from Holistic Management educator Roland Kroos of Bozeman, Montana:

- 1. Define the “whole.”** The concept of the whole includes the people, land and money involved or to be impacted by management decisions. Relatives off the farm, neighbors or other people are included in the whole. Farmers also include other land or streams that are effected by what is done on the farm.

**2. Develop a vision for the future.** Persons defined as part of the whole work together to develop a goal. In Holistic Management this is a three-part goal. The first part is a definition of the quality of life they seek, and the second is a description of production systems that will support that quality of life and result in profit. The third part is a vision of what they want the landscape to look like far into the future.

**3. Identify the effectiveness of ecosystem processes on the farm and the farm's dependence upon them.** Through this step, farmers and those they ask for assistance consider how the water cycle and mineral cycle are working on the land. For example, they note succession patterns such as changes in plant communities or in communities of soil organisms. Farmers also observe energy flow and question how effectively their farm captures and uses solar energy.

**4. Select the tools or actions to achieve the goal.** Tools and actions include the plant and animal production systems to be used, the money and labor available, technology and human creativity. Practitioners apply a set of questions or testing guidelines to determine if decisions are ecologically, financially and socially sound and if they will lead to achievement of the three-part goal.

**5. Monitor and replan.** After developing production and financial plans, farm families monitor how well plans are working, adjust the plans, and replan as needed.

While identified specifically for Holistic Management, these steps form the conceptual and functional underpinnings for a whole systems approach to both whole farm participatory research and holistic, on-farm monitoring. For more information about Holistic Management, contact the Allan Savory Center for Holistic Management at 1010 Tijeras NW, Albuquerque, NM 87; 505-842-5252, fax: 505-843-7900; e-mail: center@holisticmanagement.org; Web site: www.holisticmanagement.org.

## A Convergence of Paths

In 1992, LSP's work with farmers on grazing and its Holistic Management classes began to bring about a convergence of paths.

### Farmers' Questions about Monitoring

Several of the farmers who began practicing management intensive grazing because of their work with LSP also took LSP's Holistic Management class. They began making shifts in how they operated as a family and how they made decisions. They grew in their understanding of the importance of a holistic goal and experienced an increasing grasp of the necessity of monitoring. These shifts combined to raise numerous questions in the minds of these farmers regarding management intensive grazing. For example:

- ◆ How did this system of grazing actually affect the four ecosystem processes, especially biodiversity, on the farm?
- ◆ Would increasing biodiversity, enhancing energy flow and the water and mineral cycles actually mean an increase in financial sustainability?
- ◆ What impact did it have on quality of life, both for individuals and the family?

In particular, these farmers want to know how to measure the impacts of management intensive grazing on these and other aspects of their farm. What kinds of tools or indicators could they use to determine whether or not management intensive grazing was taking them in the direction of their holistic goals?

### Connections with Agency Officials

At the same time, some of those individuals who had been using management intensive grazing prior to LSP's work in that area were observing what seemed to be positive environmental impacts on their farms. Surprisingly, some of these positive impacts were being observed on stream banks and in riparian corridors. The suggestion that grazing cattle in riparian corridors could enhance the environmental health of the

corridors and improve water quality contradicted the standard assumptions held by the public and by natural resource agencies. This situation also raised important scientific—not to mention political—questions.

In 1993 Land Stewardship Project organized a “trial balloon” field day at the Ralph Lentz farm in order to show various natural resource agency officials what was happening to the stream on Ralph’s farm. (For more details on Ralph’s stream see the October/November 1997 issue of the *Land Stewardship Letter*; [www.landstewardshipproject.org](http://www.landstewardshipproject.org)) Not long after this field day a Department of Natural Resources staff person convened a brainstorming meeting with farmers, LSP staff and colleagues from several agencies. Their objective was to identify possible indicators and methods the farmers could use to monitor the environmental impact of management intensive grazing.

At this meeting, the participants determined that many of the biological monitoring tools for grasslands available at the time were oriented toward more arid range lands and did not seem adequate for the environmental conditions of the Upper Midwest. This group concluded that many of the indicators and methods that would be helpful to farmers in this and similar regions were not readily available.

### Funding Opportunities

By 1992, Land Stewardship Project had already received funding from a Kellogg Integrated Farming Systems (IFS) Initiative grant to explore the concept of evaluating the impacts of holistic, or whole farm, decision making. One of the aims of the IFS Initiative was to enhance collaboration between land grant university faculty and farmers. Then in 1993, the Minnesota Institute for Sustainable Agriculture (MISA) solicited pre-proposals that called for developing interdisciplinary teams to develop more holistic approaches to encouraging the adoption of sustainable agriculture.

As these paths converged, the opportunity to develop an innovative, exciting and collaborative project became obvious to all those involved thus far.

### In Summary

The Monitoring Team grew out of an unplanned coming together of farmers, nonprofit staff, agency personnel and university researchers united by shared concerns and a common interest in looking at the issues from a more holistic perspective. The following comment by Dan French, one of the participating farmers who was instrumental in the Monitoring Project’s development, zeros in on why the Project’s origins were of such a ground-breaking nature:

“This project came about because farmers had questions. With the assistance of Land Stewardship Project and DNR staff, we went out and found the researchers and the people to work on these questions. Together we crafted the research pieces and put this whole thing together. It wasn’t the researchers coming out and asking farmers if we wanted to be involved in a certain aspect of their research project. The difference is HUGE! It is an entirely different approach and is what makes this project so unique and exciting!”

The fact that the Monitoring Project began with farmers’ questions, rather



*Larry Gates of the Minnesota DNR points to the positive impacts managed grazing can have on riparian corridors, as seen at Ralph Lentz’s farm near Lake City.*

## ***Major Funders of the Monitoring Project***

Minnesota Institute for  
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USDA Sustainable Agriculture  
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<sup>2</sup> Cooperative State Research Service, United States Department of Agriculture under grant/cooperative agreements 94-COOP-1-0809 and 96-COOP-1-3020. Any opinions, conclusions, or recommendations expressed in this publication are those of the authors and do not necessarily reflect the view of the U.S. Dept. of Agriculture.

than originating from within a university or agency setting, set the precedent upon which the Project’s team-oriented, whole-farm approach was built. The process of working together to develop this new approach excited everyone involved. Team members came together eager and willing to try to step out of their traditional ways of operating to create the process outlined in this report.

## **About this Report**

### **Collective Reflections**

Through deliberate effort—as well as trial and error—the Monitoring Team learned what a successful, rewarding whole farm participatory research project requires. The recommendations detailed in the remainder of this report evolved from the Team’s collective reflections on its experiences and are intended to convey these lessons to others.

And while the recommendations convey a wisdom based on experience, they are not meant to be applied without consideration of the needs and circumstances of the particular situation at hand. In other words, the Team means for these recommendations to be used as flexible guidelines rather than fixed dos and don’ts. The Team’s hope is that those who accept the invitation to engage in this new way of doing agricultural research enjoy the many benefits it experienced and avoid its mistakes and difficulties.

### **Organizational Notes**

A whole farm participatory research project has five relatively distinct phases: 1) the project development phase, 2) the team development phase, 3) the research phase, 4) the integration phase, and 5) the evaluation phase. For clarity, the recommendations in this report are grouped and numbered according to these phases. For example, the first recommendation for phase one is labeled as “Recommendation 1:1,” the second as “Recommendation 1:2,” and so forth.

Each phase section begins with a summary listing of the recommendations that most apply to that phase. The remainder of the section discusses each of the recommendations in fuller detail, laying out the rationale and experiences behind each of them.

Please note that, even though the recommendations are presented in a sequential fashion, in reality many of them involve considerations that need to be accounted for throughout the course of a project, especially during its planning and development.

# Phase One:

## Project Development

A whole farm participatory research project can be a substantial undertaking. The combination of its team-based approach and holistic perspective make it so, even if it does not involve the size and scope of the Monitoring Project. The more thought and planning that goes into the development stage of such a project, the more likely the project is to produce good research and be a positive experience for all who participate.

While most of the recommendations in this report need to be considered when developing a whole farm participatory research project, those in this section specifically apply to the development phase.

### Summary List:

#### Phase One Recommendations

- 1:1 Let the overall context of a whole farm participatory research project be heavily influenced by the management goals, concerns and questions of the participating farmers.**
- 1:2 Strive to include everyone's perspective and concerns at all stages of a whole farm participatory research project.**
- 1:3 Sponsor seminars on whole systems thinking, whole farm management and team development. Encourage all principal project participants to attend.**
- 1:4 The convening, administrative organization must be fully committed to following a whole farm participatory approach to research.**
- 1:5 Determine the project's main components and principal participants as early in the development phase as possible. If changes are warranted, work to include everyone in on the decision making process and to bring new team members up to speed as quickly as possible.**
- 1:6 Use the matrix format to help delineate the project's main research components and principal participants and to facilitate team communication throughout all phases of the project.**
- 1:7 Give careful consideration to the geographic scope of the project in terms of the specific research considerations involved and the implications for practical concerns like meetings and data collection.**
- 1:8 Identify the possible products the team may want to produce for public distribution (such as workbooks, videos and public reports) during the project development phase so as to adequately plan for and fund their development.**
- 1:9 Determine the budgeting and reporting needs of the various institutions, agencies and organizations involved in the Project and develop a simple tracking form that can accommodate the needs of everyone.**
- 1:10 In addition to compensation for the various university departments, resource agencies, and nonprofit organizations involved, include fair compensation for the farmer participants in the project's budget.**
- 1:11 Consider these two points when determining the project's staffing requirements: a) let the scope of the project determine these requirements; and b) avoid an overly optimistic approach when estimating the time needed to fulfill staffing responsibilities.**

## ***Reflections from George Boody, the Project Director***

Through this Project the Team developed new and successful processes for on-farm monitoring, for whole farm participatory research and for sharing information with others. We learned a great deal and made many mistakes. But through it all we came to respect and appreciate each other as friends and colleagues.

Too often farmers and agency folks see each other as adversaries rather than partners. Our experience shows that cooperative—even friendly—partnerships are possible, as Team members Dan French (dairy farmer) and Larry Gates (MN Dept. of Natural Resources) suggest in the following comments:

**Dan:** “I felt like I could trust Larry because when we talked about improving the stream, he was willing to work in a way that would be profitable. We were both challenged by this. What has occurred amongst this team is a breakdown in barriers between farmers and agencies, as well as an openness to using new management tools.”

**Larry:** “I used to be involved in an awful lot of contentious resource issues filled with polarized arguments—a lot of we-they, you-them. And I was good at it. But as far as good stuff getting accomplished, that was rare. I knew we had to do something about that in order to address big issues. The people on this team are generous, talking with one another, considering any idea, welcoming anybody to come in and discuss it. It’s everybody’s issue; it’s everybody’s problem. You see agreement on describing a kind of future. Speaking for the participating agencies, we embrace the opportunity to work directly with farmers again. *This is a powerful way to act.*”

## **Recommendation 1:1**

**Let the overall context of a whole farm participatory research project be heavily influenced by the questions, concerns and management goals of the participating farmers.**

As the background story of the Monitoring Project details, the farmers’ questions and their holistic approach to farm management played critical roles in shaping the Project’s overall content and process. And while the Project developed into a collaborative effort in which the goals and concerns of the non-farmer Team members were included, it was the farmers’ questions, concerns and management goals that set the larger context for the Project and gave meaningful focus to the goals and concerns of the other Team members.

This convergence of the farmers’ concerns and those of the other Monitoring Team members created a stimulating and creative dynamic for everyone involved. The reality-based context gave Team members a framework from which they could jointly explore the impact of the farmers’ decisions on things like soil stability, stream health, wildlife populations and the farm family’s quality of life. It also gave many of the university and agency participants the opportunity to work with others outside of their respective disciplines and to see the larger connections between those disciplines.

Based on its experience, the Monitoring Team believes that framing a whole farm participatory research project around the farmers’ management goals, concerns and questions greatly increases the practical relevancy of the project’s work. This can happen at several levels.

First, because the research is conducted within the context of real farms, rather than in an artificially created and controlled environment, it increases the likelihood of creating a research process that produces results that are meaningful and useful on real farms. It can also help government agency personnel create more appropriate regulatory policies and monitor the real-life impact of those policies.

Second, it can increase the professional relevancy of the work of the scientists, resource agency officials, nonprofit staff and others involved. Participation in such a project can stimulate their creativity, expand their focus beyond the confines of their particular discipline and help them learn how to create constructive, collaborative relationships with farmers. And third, operating out of a whole farm, participatory, team-based context presents numerous challenges that, if met with a positive attitude, can bring about new levels of personal growth and learning for many of the team members.

## **Recommendation 1:2**

**Strive to include everyone’s perspective and concerns at all stages of a whole farm participatory research project.**

The typical development process for most farm-related research projects tends to happen within the university or agency setting. The usual procedure asks farmers to participate only after most of the basic decisions have been made. And frequently, the farmers’ participation is limited to a very narrowly defined capacity.

This limited participation greatly reduces the amount of influence the farmers can have on a project’s focus and design and can weaken their commitment to the project’s success. In addition, the farmers do not typically participate in the data analysis, making them less likely to trust the research results or see the relevancy of the research to their farms.

The process used by the Monitoring Project represents a completely

different approach from the norm. The up-front expectation was for all team members to participate as equals. The Team farmers worked side-by-side with the scientists, agency personnel and nonprofit staff to develop all the components of the Project: from its goals and objectives and team development needs to its research design, work plans and the research integration process.

When people from diverse backgrounds come together and interact with each other as full and equal participants, this provides a powerful base from which to build the trust and commitment needed for the entire process to really work.

### **Recommendation 1:3**

#### **Sponsor seminars on whole systems thinking, whole farm management and team development. Encourage all principal project participants to attend.**

Whole systems thinking (on and off the farm) and using a truly participatory, team approach to research efforts represent new territory for most farmers, university scientists, agency personnel and nonprofit staff—not to mention the institutions or professions of which they are a part. While the rhetoric may be familiar to some, actual experiential knowledge is likely to be limited or nonexistent. When faced with the inevitable challenges of trying to pull off a major new venture like a whole farm participatory research project, the human tendency is to retreat to what is familiar. Although understandable, such a fallback could seriously jeopardize the integrity of a project that is trying to break new ground.

Although the Monitoring Team did not always meet the ideals it set for itself with regard to keeping a holistic perspective and operating as a collaborative team, it did have an advantage in the fact that many of its members had some familiarity with whole systems thinking and team-based efforts. What they lacked in actual experience they made up for by their commitment to this new way of doing on-farm research.

Attendance by all project participants of project-sponsored seminars on whole systems thinking, whole farm management and a participatory, team-based approach is one way to ensure that at least everyone involved shares a base level of familiarity with these topics. Schedule the seminars as early in the development phase of the project as possible, especially once all the principal participants are determined. Include these seminars in the proposed work plan and budget of any funding proposals pertaining to the development phase of the project.

### **Recommendation 1:4**

#### **The convening, administrative organization must be fully committed to following a whole farm participatory approach to research.**

The overall success of a whole farm participatory research effort is highly dependent upon the level of commitment the convening, administrative organization brings to that approach. Its leadership sets the tone for the project and largely determines the project's ability to follow—and stick with—a whole farm participatory approach.

In the case of the Monitoring Project, everyone involved knew they were delving into unknown territory and having to “learn as they went.” This included the Land Stewardship Project, the nonprofit organization that convened the Monitoring Project and oversaw its administration. Once again, it was because

### ***Reflections from George Boody, the Project Director***

Our intention was to value everyone's perspective and the particular kind of information they brought to the project. But we took it further.

We decided to monitor changes in the quality of life of all the team members—not just the farm families. Sometimes this decision led to heated controversies for it meant that we were all subjects of the research—as individuals, as team members, as professionals and as family members. It meant that the Project wasn't just about data collected from a plot. We all had a responsibility to provide data on how we were doing and how we each began to approach our work differently as a result of the Project.

“Participatory research—at least when it's about people's personal and social lives—is about embracing multiple truths. An outsider's perception of someone's experience and its meaning is often different from someone's perception of their own experience and its meaning for them. Exploring those meanings collaboratively can move both parties towards a mutual analysis and understanding of what needs to change, if anything. But that collaboration does not take place easily [nor] without respecting the other's basis for knowing (or not knowing) what's true about the world. That respect grows out of trust, and trust leads to growth.”

—*Monitoring Project Team member Alison Meares*

## Holistic Resources

The Allan Savory Center for Holistic Management and its network of educators and associates offer a wide variety of courses and other resources on whole systems thinking, whole farm management and team development. (See page 4 for contact information.)

Several groups within Minnesota have cooperatively produced materials on what they call “whole farm planning.” These free materials are available from the Minnesota Project at 1885 University Avenue West, #315, St. Paul, MN 55104; (612) 645-6159. The materials are also available off the Internet. Go to [www.misa.umn.edu](http://www.misa.umn.edu) and find the listing for The Minnesota Project. Once on The Minnesota Project’s Web site, click on the “Whole Farm Planning Home Page.”

Two recommended books on whole systems thinking are:

√ *The Fifth Discipline: The Art and Practice of the Learning Organization*, by Peter M. Senge (New York: Doubleday, 1990).

√ *The Fifth Discipline Fieldbook: Strategies and Tools for Building a Learning Organization*, by Peter M. Senge, Art Lieiner, Charlotte Roberts, Richard b. Ross and Bryan J. Smith (New York: Doubleday, 1994).

of LSP’s high level of commitment to—rather than actual perfected knowledge of—a whole farm participatory approach that enabled the Project to achieve the level of success that it did.

Land Stewardship Project’s commitment to a whole-farm participatory research process stemmed from its familiarity and support of Holistic Management and its long-standing support of participatory education. Its facilitation skills and established history as a connective bridge between scientists, resource agency staff, farmers and the general public also enhanced the effectiveness of LSP’s leadership role in the Monitoring Project. The organization’s commitment was bolstered further by the support of key funding sponsors, especially the Minnesota Institute for Sustainable Agriculture (MISA).

LSP’s experience with the Monitoring Project points to the unique convening and administrative role that nonprofit organizations can play in whole farm participatory research efforts. These types of organizations may be in the best position to provide a supportive environment within which people of various concerns and backgrounds can come together and work as a collaborative team.

## Recommendation 1:5

**Use the matrix format to help delineate the project’s main work components and its principal participants and to facilitate team communication throughout all phases of the project.**

Two of the greatest challenges in any research process are the organization of information and the clear communication of that information among team members. The *matrix* format proved to be a useful tool for both tasks for the Monitoring Team, especially during the development and integration phases of the Project.

A matrix consists of columns and rows. Specific categories of information are listed across the top of the matrix from left to right. These form the columns of the matrix. The rows are determined by the items listed down the first, or left-most, column. Usually these are items that apply to all of the other columns. The matrix is completed as information pertaining to each column is filled in across the rows.

The strength of the matrix format lies in its ability to frame large amounts of information or involved discussions and make them manageable and intelligible. Also, the flexibility of the matrix format allows for a great deal of adaptation, making it a useful tool throughout all phases of a research project. In fact, one internal critique of the Monitoring Project was that it did not make use of this tool as much as it could have, especially during the research phase.

Here are just some of the ways the matrix format can be used throughout all phases of a whole farm participatory research project:

- to delineate the main work components of the project and the appropriate principal participants
- to frame and document group discussions
- to keep everyone on the Team clear and informed about group discussions and decisions
- to frame research questions, keep track of research results and prepare research update reports
- to clarify team members’ roles and responsibilities
- to integrate project research results
- to evaluate project goals and objectives as well as team process
- to lay out future research needs or follow-up plans

The following are some of the categories that might apply to a discussion matrix used to determine the main components of a project and its principal participants during the development phase:

- ◆ Major Components
- ◆ Expertise/ Perspectives Needed
- ◆ Staffing Needs
- ◆ Potential Techniques/Tools
- ◆ Potential Outcomes

These categories are listed across the top of the matrix from left to right. Under the category of “Major Components,” and forming the left-hand column, all of the potential work areas of the project are listed. This category obviously includes the main topics or questions the Team wants to research. It also includes any other major work the Project seeks to accomplish, such as public outreach, product development, and internal project administration and management.

If the matrix format is used to its maximum potential, any given project will have numerous matrixes in circulation. And, within each particular project phase, the matrix(es) in use will likely be

<b>Development Matrix: XYZ Project</b>					07/01
Major Components (e.g.)	Expertise/Perspectives Needed	Staffing Needs	Potential Tools/ Techniques	Potential Outcomes	
Collect Monitoring Data					
Collect Farmer Observations					
Produce Program Newsletter					
Publish <i>Monitoring Tool Box</i>					
Produce <i>Close to the Ground</i> video					
Engage Farmers & Other Professionals in Monitoring					

modified from time to time, creating several versions of the same matrix. Be sure to clearly *label* and *date* each matrix as its created in order to identify its subject matter and version.

**Recommendation 1:6**

**Determine the project’s main components and principal participants as early in the development phase as possible. If changes are warranted, work to include everyone in on the decision making process and to bring new team members up to speed as quickly as possible.**

Initially, the Monitoring Project consisted of a team of ten people and was primarily focused on the biophysical monitoring of grass-based livestock operations. The social and financial components, as well as new dimensions of the biophysical activities, were added to the Project’s scope late in the development process, after certain parameters already had been established.

These late additions led to a number of difficulties. Many of these changes and add-ons occurred within a short period of time, giving the impression to some team members that not everyone was being allowed to participate in the decision-making process. The result, according to Team Member Larry Gates, was that “the old fallback human tendencies of ‘who’s doing what to me’ and ‘we/they’ polarizations surfaced immediately.” This had an eroding effect on the “equal voice” principle the Team was attempting to follow.

Another obvious difficulty comes with the addition of new people to an already established Team. The challenge is twofold: 1) bringing the new members up to an equal level of understanding of the goals, objectives and team process when they have not had the time for reflection and discussion that the established members have had; and 2) allowing the new members to contribute to the project goals, objectives and team process in meaningful ways, ways that may result in the significant reshaping of the project.

Projects naturally tend to shift and evolve over time, and people come and go from the team. Being conscious of the challenges this creates and being prepared to meet those challenges will greatly contribute to the overall workability of the project. In other words, adaptive skills are as critical to a project’s success as are good planning skills.

### **Recommendation 1:7**

**Give careful consideration to the geographic scope of the project in terms of the specific research considerations involved and the implications for practical concerns like meetings and data collection.**

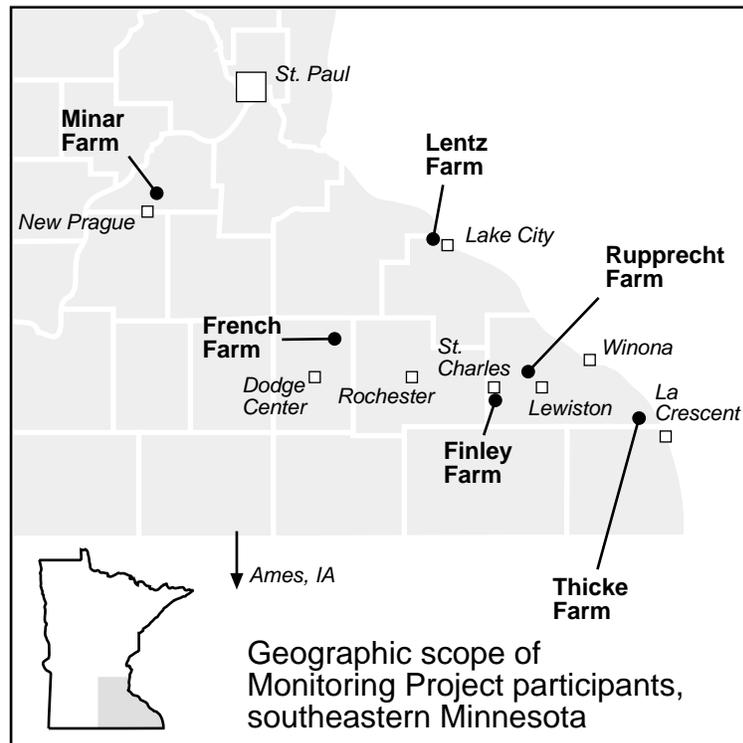
Most of the principal participants in the Monitoring Project were scattered over an eight-county area that stretched from the Twin Cities south and east toward Rochester, Minnesota, and La Crosse, Wisconsin. Two team members were located in Ames, Iowa.

This wide of a geographical scope was intentional for several reasons: 1) to include specific farmers who were using management intensive grazing and who were interested in participating in the Project; 2) so farms with different soil types and microclimates could be more safely generalized to a larger area; and 3) to include researchers and agency personnel who were interested in the project’s holistic, interdisciplinary and participatory orientation.

But the Project’s geographic scope did cause some practical difficulties. Travel time for some participants was often two to four hours one way. This often posed scheduling challenges with regard to meetings and executing work plans. Although many team meetings were held at more central locations, this was not always possible or desirable.

The distance factor also made data collection more time consuming and costly. It also led to snags in the researchers’ ability to collect samples in a timely manner. For example: When the farmers needed to graze or otherwise impact an area sooner than planned, it was not always possible for the researchers to get to the farms in time to collect the pre-impact samples.

Undoubtedly, regular team meetings, which are necessary to create a true “team atmosphere,” and data collection would be much easier to carry out if all those involved in a whole farm participatory research



project lived and worked within relatively close proximity to each other. Whole farm participatory research may also be more easily accomplished at a watershed or sub-watershed level, especially if the farms involved represent a diversity of soil types and terrains.

### **Recommendation 1:8**

**Identify the possible products the team may want to produce for public distribution (such as workbooks, videos and public reports) during the project development phase so as to adequately plan for and fund their development.**

The Monitoring Project Team's development of *The Monitoring Tool Box* proved to be a more involved process than anyone imagined. The initial concept for a "tool kit" was rather vague and continued to evolve over the course of the Project. The lack of professional publishing experience by Team members and the limited time they had to devote to the Project contributed to the Team's miscalculation of the time and energy required to develop and produce this kind of practical, educational publication.

And, although the Team recognized the need to solicit the help of outside professionals to produce the video *Close to the Ground*—and planned for it in its budget, they did not see the same need with regard to *The Monitoring Tool Box* until late in its development.

If producing products for public distribution is part of a whole farm participatory research project's goals and work plan, the first step is to identify those products—even if only in general terms at the start of the project. As part of this step, the team needs to honestly assess which products can be developed internally by team members and which products require outside, professional assistance. A key lesson learned by the Monitoring Team was that high quality publications take time and expertise to develop and produce.

The next step is to determine the approximate development and production costs of the various products and to work these costs into the project's funding proposals. A safe budgetary rule of thumb is to double any initial estimate—products invariably take longer to develop and produce than anyone initially thinks they will. If a product's scope or focus changes over the course of the project, the initial budget may be insufficient and additional funding may need to be raised.

If a project's goals and objectives include the intension to produce a fairly substantial publication, or several publications, include someone with professional writing and publishing experience as a paid staff team member from the beginning of the project. Their experience can be a valuable asset and make the project's product development work more efficient and much less frustrating.

### **Local Projects**

The Chippewa River Whole Farm Planning and Monitoring Team, which is part of the Sustainable Farming Systems Project described on page 3, is an example of a watershed-based whole farm participatory research effort. In fact, the Chippewa Team considers itself to be a "research and education consortium."

The farmers and landowners in the Chippewa River basin group represent a diversity of situations: large and small, beets, corn, soybeans, grazing livestock and organic vegetable production.

Additional members include representatives from the University of Minnesota West Central Research and Outreach Center, the Minnesota Department of Natural Resources, the University of Minnesota Extension Service, the Minnesota Institute for Sustainable Agriculture, the Minnesota Pollution Control Agency, the Chippewa County Soil & Water Conservation District, and the Land Stewardship Project. They also have input into and are influenced by the Chippewa River Watershed Partnership and the Chippewa River Coalition.

Part of the Chippewa Team's goal is to provide a working model that demonstrates how to build the capacity for whole systems thinking and team work and how to develop partnerships to address resource-based issues and needs. The Team's varied research and educational activities include whole farm planning workshops; field days; training and assistance in visioning, team building and developing action plans; monitoring soils, stream biota, quality of life, birds, pastures, finances, animal health and herd health; and creative on-farm problem solving.

## Special Administrative Recommendations

Project development obviously involves thinking through various administrative issues, including preparing budgets, determining staffing requirements and developing management strategies. Below are several administrative issues that the Monitoring Team recommends be considered when developing a whole farm participatory research project:

### **Recommendation 1:9**

**Determine the budgeting and reporting needs of the various institutions, agencies and organizations involved in the Project and develop a simple tracking form that can accommodate the needs of everyone.**

Management of a diverse research effort like the Monitoring Project—with a total budget of approximately \$650,000.00, twenty-six team members, fifteen associate participants and eight research components—is, needless-to-say, complex.

Because of the collaborative nature of the Project, the Project Director needed to coordinate budgeting and reporting with the university departments and resource agencies involved. The fact that universities and agencies have different and more cumbersome budgeting systems than do nonprofit organizations complicated the Project’s budgeting and reporting process at times.

A simple, standardized form that all project team members use to help keep track of their individual expenses and activities can alleviate a lot of the stress and confusion too often associated with these kinds of administrative tasks.

### **Recommendation 1:10**

**In addition to financial compensation for the various university departments, resource agencies and nonprofit organizations involved, include fair compensation for the farmer and private sector participants in the project’s budget.**

Due to the extensive time required of participating farmers to successfully carry out the Monitoring Project’s goals and objectives, the farmer members of the Project Team received financial compensation for their time and expenses for participating in team meetings and events.

Set the compensation for the farmers’ time at a rate comparable to that of the other professionals on the team. Any non-farmer, private sector participants should also receive financial compensation for their contributions.

### **Recommendation 1:11**

**Consider these two points when determining the project’s staffing requirements: a) let the scope of the project determine these requirements, and b) avoid being overly optimistic when estimating the time needed to fulfill staffing responsibilities.**

Staffing the Monitoring Project was a big job, one for which the time and staffing requirements were at times substantially underestimated. For example, the job of Project Coordinator changed hands several times over the course of the Project. The disruption of these turnovers was further complicated when, for a significant portion of the Project, the Research Coordinator also took on the role of Project Coordinator. In retrospect, this turned out to be a poor decision; each of these positions really requires a full-time individual.

The following are some of the roles and responsibilities associated with a whole farm participatory research project, particularly one of similar size and scope to the Monitoring Project. Projects of a smaller size and scope may not involve as great a time commitment, but many of the same roles and responsibilities are still likely to apply. When determining the project’s staffing needs, be clear about what the team wants to accomplish and be realistic about what it will take to accomplish its goals and objectives.

**Project Director (full-time):**

- play a leadership role in all phases of the project, especially phases one, two and five
- play a leadership role in articulating the “big picture” to team members and in keeping the project on track with its goals and objectives
- manage administrative tasks such as proposal writing, preparing reports and managing the budget and project staff
- facilitate most meetings involving the whole team and oversee the implementation of team decisions
- monitor and facilitate team cohesiveness and health
- engage in outreach to others around the country

**Project Coordinator (full-time):**

- assist Project Director
- organize team meetings and coordinate communication and activities among team members
- work with Research Coordinator as needed, such as to organize public field days and coordinate the on-farm monitoring activities of the farmers
- work with Project Writer on internal project newsletter and public news releases
- assist with the implementation of team decisions

**Research Coordinator (full-time):**

- oversee the coordination of the research components, including the on-farm monitoring activities of the farmers
- assist research subteams in the collection of data as needed
- work closely with the Project Coordinator and Project Writer as needed
- oversee the integration of research results

**Project Writer (three-quarters to full-time):**

- document the proceedings and activities of the project at all phases
- edit and produce internal team newsletter and prepare public news releases
- oversee the development and production of all project publications
- assist Project Director in the preparation of annual and final reports

**University/Agency Liaison (quarter-time or less):**

- assist Project Director with project development tasks
- hire the Research Coordinator; provide ongoing direction to that person along with Project Director
- serve as liaison for the Team to the larger university and agency communities

## Phase Two: Team Development

The success of a whole farm participatory research project ultimately rests upon the strength and cohesiveness of the project's team. The Monitoring Team learned very quickly that, in terms of team development, they “needed to go slow early on in order to go fast later.” This meant investing the time and energy needed for people to get to know each other and to figure out how to work together as a team—before they got down to the actual business of the research. They could see that their efforts would be well worth the

investment in both the short-term and the long-term.

Most of the following recommendations address concerns related to what can be thought of as “building team membership.” This initially involves gathering together a group of people who are willing to support an already emerging vision. That vision is developed further as the team grows in cohesiveness and as each member “buys into” the shared vision. Building team membership is, therefore, about *building ownership of a shared vision or goal* that is larger than those of the individuals who make up the team. The degree to which each team member “owns” the larger goal determines the level of support and effort they are willing to give to the project’s success.

The other recommendations in this section deal with “team process” issues, or the setting of the norms by which the team agrees to function as a collaborative unit.

## Summary List: Phase Two Recommendations

- 2:1 Solicit people who fit the context and scope of the project’s research focus and who are willing to commit to a whole systems approach and to participate as a member of a collaborative team.**
- 2:2 Use both formal and informal means to help team members get acquainted and build trust in each other.**
- 2:3 Clarify roles and responsibilities among team members at the onset of the project and as needed throughout the course of the project.**
- 2:4 Collectively determine how team members want to function with regard to the following issues: meetings, communication, decision making and implementation, and conflict prevention and management.**
- 2:5 Undertake the following four steps as a precursor to the development of the project’s research design and work plans:**
  - Step A: Visit each of the participating farms as a whole team.**
  - Step B: Prepare a descriptive, whole-picture sketch of each participating farm prior to researching the specific pieces of interest to the project.**
  - Step C: Engage in a process that allows team members to clarify their individual needs, expectations, assumptions, perspectives and experience with regard to the specific research questions and the overall concerns of the project.**
  - Step D: Use whole team discussions to formulate the team’s shared operating assumptions and its goals and objectives for the project. From this work prepare written statements of both.**

### Recommendation 2:1

**Solicit people who fit the context and scope of the project’s research focus and who are willing to commit to a whole systems approach and to participate as a member of a collaborative team.**

Obviously, a research project team is built around people who have skills and expertise related to the general research focus of the project. However, skills and expertise are only part of the qualifications needed. Anyone who becomes involved with a whole farm participatory research project must also be willing to commit to the holistic approach and to participate as an equal member of a collaborative team. Team members who lack such a commitment can be a very disruptive force to the entire process. The basic choices for that person are to not join the team in the first place or else to be willing to change and give the process a try.

Most likely, the final makeup of the project team includes many of the same people who have helped to develop the project up to this point. However, it still may be necessary or desirable to solicit others with specific interests or skills to join the team. Regardless of how people come to be a part of the team, everyone needs to be clear about what they are involving themselves in from the onset.

The project's convening organization needs to take the lead in articulating the nature of this commitment to the potential team members. It must also exemplify a commitment to a participatory team approach by the way it manages the project.

## Recommendation 2:2

### Use both formal and informal means to help team members get acquainted and build trust in each other.

Once the teams' principal members are determined, the first priority is to get acquainted with each other and begin to work on building trust within the team. Both formal and informal means of doing this are advised. Here are some suggestions:

1. Make use of various formal inventory or testing tools that can help uncover the different *learning styles* of team members (such as auditory, visual, or kinesthetic) as well as their *personality traits* (such as introvert or extrovert, action-oriented or process-oriented, and so forth). Incorporate these differences in the overall process by which the members agree to function as a team.
2. Use the whole systems thinking and whole farm management seminars (suggested in Recommendation 1:3) as an experiential common denominator for the team and as a basis for discussing the different *paradigms*, or world views, held by team members.
3. Devise creative ways for the team to explore the meaning of the phrase "work as a collaborative team." These could include role playing, doing skits, telling stories, sharing ideas from books on the subject and so forth.
 

Use these exercises to demonstrate qualities such as the following:

  - willingness to learn from each other
  - willingness to change one's perspective or way of operating for the greater good of the team or project
  - willingness to offer leadership when necessary
  - willingness to look beyond self-interest and accommodate the needs or concerns of others or of the team

Examples that demonstrate the opposite of these qualities may also be instructive. From these experiential exercises, craft a "code of conduct" or a collective statement on "teamwork" that is meaningful to everyone on the team.

4. Make informal gatherings, such as potluck meals and exploratory walks on the participating farms, a regular part of the team's meeting schedule. And, whenever possible, schedule time for fun activities at team meetings, such as storytelling, playing games or hosting a bonfire. These types of activities can greatly enhance both personal and working relationships among team members.

## Reflections from George Boody, the Project Director

We believed that the information and the products the Project generated could make a difference out in the world. Take on-farm monitoring for example: we knew it was essential to the whole farm management process and we assumed others would see this and want to do it. We also assumed on-farm monitoring would naturally lead people to explore other aspects of their farm and that would lead to positive improvements in farms, the environment and communities of people.

We quickly learned, however, that it was our interaction with each other that made all the difference. That's what generated the energy and interest, not just the availability of a tool. The same kind of interaction will need to happen between farmers and other professionals to spread the practice of on-farm monitoring. We purposely designed *The Monitoring Tool Box* and our new newsletter, *Close to the Ground*, to promote such interactions.

We also incorporated this understanding into the way we did our public presentations to other farmers, agency officials, political leaders and scientists, fellow sustainable agriculture groups and the public. And, we developed a successful field day template that featured different aspects of the whole farm, including goal setting, and team members interacting on everything from quality of life to stream monitoring. We were very proud of this.

Trying to walk our talk was exciting and rewarding for the team and the excitement and intellectual stimulation was palpable to others.

"When this project started, I expected a smaller scale effort with less far-reaching, long-term impact. Now I see that the potential for reaching and assisting family farmers is enormous."

—Monitoring Project  
Team member  
Tex Hawkins

5. Attend educational events sponsored by other organizations and institutions, either as individuals or as subteams, and use the team’s internal newsletter to report back to the whole team what was learned from the event as it pertains to the team or project.

To enhance the team building process, seriously consider making use of team development resources available within the local community and beyond. Some of these resources include businesses, organizations or individuals that specialize in helping groups build effective teams. Valuable team building resources also may be available through your state’s University Extension Service.

### **Recommendation 2:3**

#### **Clarify roles and responsibilities among team members at the onset of the project and as needed throughout the course of the project.**

At some point early on in the team development phase, make sure everyone on the team is clear about each other’s roles and responsibilities. A clarification of roles and responsibilities helps to ensure that all the important pieces of the team’s work are covered by someone on the team. Most importantly, it helps to facilitate good communication among team members by letting them know who to involve or talk to regarding the various aspects of the project’s work.

Each team member is likely to play several roles. Specific team members have staffing, administrative and leadership roles and responsibilities. Everyone on the team shares the role of team participant and is obliged to fulfill the various responsibilities that come with that role. Each team member is also likely to play some sort of role in the actual research phase of the project. What these roles are, as well as their particular responsibilities, will become clearer once the research phase is underway.

When clarifying roles and responsibilities, also make sure that the team is aware of those persons who may be involved with the project in some way but who, for various reasons, are not part of the project team. These might include research assistants, volunteer data collectors, associate scientists and paired farmers (farmers who allow researchers to collect data on their farms as controls to the research done on team farms).



*Walking tours of the participating farms can help clarify biophysical research issues for the whole team.*

## Recommendation 2:4

Collectively determine how team members want to function with regard to the following issues:

### Meetings

As a team, decide how frequently to get together and determine the different types of meetings or gatherings needed to do team business. Note that some meetings will be more formal than others. Many will be dominated by large group discussions; some will include small group work. Some team members, such as research subteams and project staff, will need to meet outside of the regular whole team meetings. And there may be times when the Project and Research Coordinators will need to meet with just the farmers on the team.

To prevent whole team meetings from getting bogged down in administrative or day-to-day decisions, teams with over ten members may want to appoint a smaller *management team* that is authorized to make these kinds of decisions between meetings of the whole team. Such a team might include the project staff along with a representative from each of the different groups that make up the team.

When determining meeting schedules and formats, take into account the need to maintain team cohesiveness, good communication and ownership of the larger vision and of project goals. Be sure to plan for informal time and fun. Match the different types of meetings with the appropriate setting and location and discuss who will facilitate which meetings.

### Communication

Good communication is the glue that keeps a whole farm participatory project together and makes it a good experience for everyone involved. Encourage each team member to see the importance of good communication and to be willing to take responsibility for their personal contributions to its establishment and maintenance. Project staff can also use various tools, such as an internal newsletter or regular communiques and updates via e-mail or regular mail, to ensure good communication among team members. As a team, consider how to handle any external communication with the public and others outside the scope of the project.

### Decision Making and Implementation

Collectively decide on the ground rules by which the team makes and implements its decisions. Also, make use of any processes that can help the team keep track of its decisions, such as the matrix format or the one outlined below.

The following simple process is based on the Activity Calendar tool outlined in the "Monitoring Quality of Life" chapter of *The Monitoring Tool Box*. In addition to being a tracking tool, the process can help the team keep a realistic perspective on what members can be expected to accomplish between meetings.

1. At any team meeting, either of the whole team or of subteams, the facilitator keeps track of all the decisions made at that



*A fine fall day allows the Monitoring Team to meet outside in the fresh air and sunshine.*

## *Good Food, Good Meetings!*

A particular highlight of Monitoring Project meetings was the "home-cooked" meals served at many of them.

Many of these high quality meals, which often featured meat and produce from Team members' farms, were prepared or arranged for by Team member Beth Waller.

Some Team gatherings included a potluck supper. At these, everyone on the Team had the chance to contribute an informal and enjoyable ambiance that helped Team members get to know each other better.

Lesson learned: Good food makes for good meetings!

- meeting. The facilitator also keeps track of any identified tasks.
2. Toward the end of the meeting, these decisions and tasks are listed vertically on the left hand side of a large piece of paper so that all participants can clearly see them.
  3. Then, the group goes down the list and identifies the person best suited to implement each decision or accomplish each task. That person's name is written next to the decision or task followed by the date by which the item needs to be completed. (If possible assign each person on the team a different color marker.)
  4. Then the group reviews the list and work assignments and looks for any potential problems, such as overloading one person or unrealistic time frames.

Using this process to document team decisions and tasks clarifies who is responsible for implementing them. It also identifies any possible overloads or crunch times, thus allowing the team to make any necessary adjustments prior to adjourning the meeting and reducing the chances for future problems or conflicts.

### **Conflict Prevention and Management**

As the old adage says, "An ounce of prevention is worth a pound of cure." This is certainly the case with the issue of conflicts in team-based efforts. The more that can be done to prevent the development of conflicts the better. Time spent on building team trust and ensuring good communication among team members are critical conflict prevention strategies.

Experience also points to the necessity of being prepared when conflict does arise among team members. For instance, the team can establish a set of ground rules by which everyone pledges to abide. Here are some examples:

- ◆ Take personal responsibility for dealing with any conflicts you have with others.
- ◆ Avoid triangulation, or discussing an issue of conflict between you and someone else with a third person who has nothing to do with the conflict.
- ◆ Address the issue under conflict within a certain time frame or be prepared to let go of it.
- ◆ Choose a non-public setting in which to address the other person(s) about your conflict with them.

Also, decide how to handle situations in which the parties involved are unable to settle the conflict themselves. If appropriate, someone on the team could facilitate a solution. Otherwise, bring in an outside mediator trained in conflict resolution/management. Above all, stress the importance of addressing conflicts in a proactive and respectful manner.

### **Recommendation 2:5**

**Undertake the following four steps as a precursor to the development of the project's research design and work plans:**

#### **Step A: Visit each of the participating farms as a whole team.**

The Monitoring Team did group walking tours of each of the participating farms prior to the research design phase. This practice proved to be a very effective way for the entire team to become familiar with the particular circumstances out of which the farmer's questions arose in the first place. These farm walks allowed everyone on the Team to get a sense of the values and goals of each of the farm families and to see how these would potentially influence the financial and social research components of the Project. And they were particularly helpful in clarifying the biophysical issues the Team wanted to research.

#### **Step B: Prepare a descriptive, whole-picture sketch of each participating farm prior to researching the specific pieces of interest to the project.**

Contrary to popular understanding, a holistic perspective is not just about looking at the big picture. It involves a continual process of moving back and forth between the big picture and the details and making tentative connections between the two ends of the spectrum along the way.

The essence of a whole farm participatory research process is to engage in this kind of back and forth movement between the big picture and the details. Start with the big picture, zoom in on the details and

then move back out to the big picture, all the while looking for connections and ripple effects. This process may happen formally and informally many times throughout the course of the project.

Preparing a descriptive, whole picture sketch of each farm at the beginning of the project provides the team with a common reference point and helps to make sure everyone on the team understands the larger context of the project's research efforts. These sketches will be of particular value to the team when it gets to the integration phase, setting up a "before and after" comparison. They also serve to remind the team that its findings, no matter how seemingly conclusive, are more representative of tendencies rather than absolutes. No two situations in life or on the farm are ever exactly the same because the variables are always different or changing.



*The Monitoring Project Team's field trip to learn about "goat prairies" also served as a great team-building opportunity.*

**Step C: Engage in a process that allows team members to clarify their individual needs, expectations, assumptions, perspective and experiences with regard to the specific research questions and concerns of the project.**

The more a team is able to clarify what each of its members brings to the project, the greater the chances of a successful project. This step cannot be rushed into or overlooked. These discussions are best built upon an already formed base of familiarity and trust among team members and are best held prior to the actual research phase of the project.

Use an appropriate and nonthreatening small group format to solicit the following items from each team member:

- their personal and professional needs and expectations for the project
- their individual goals and objectives for their participation in the project
- their assumptions about or perspective on the issues of the project
- their experience and knowledge about the issues of the project

**Step D: Use whole team discussions to formulate the team's shared operating assumptions and its goals and objectives for the project. From this work prepare written statements of both.**

Under the facilitation of the Project Director or a professional consultant, the process shifts to whole team discussions on both the insights and ideas generated from the farm visits and on the small group work from step C. The main objectives of these large group discussions are to highlight team members' particular goals, concerns and expertise; root out and resolve any initial problems, misunderstandings or disagreements; identify common ground among team members and finally develop written statements of the team's operating assumptions and of its goals and objectives for the project.

## Shared Assumptions

Initially the concepts below were used informally to screen prospective team members. As the Team learned more about each other and were better able to articulate their shared assumptions, these became the foundation of the Project’s research design and the dynamics of the Team’s interactive process:

- The information we produce is intended to help farmers determine if they are progressing toward their goals.
- This type of inquiry requires long-term observation to gauge impacts on the ecosystem and family well-being. Nevertheless, in the shorter term we will develop useful indicators for farmers, useful information for policy makers and questions and hypotheses for ongoing research in these and other settings.
- Ecological data collected on paired farms (in a continuous pasture or row crop setting), by providing a point of reference, will help us understand the rapid changes that are taking place on team farms.
- Each team member brings an important perspective that needs to be heard.
- The whole is greater than the sum of the parts. The Team poses questions, interprets and integrates data that is gathered by specialists and farmer observation. We have agreed that conclusions need to be approved by the Team before being stated formally in the Team’s name.
- Each team member is a “subject” in this research process. We want to understand how participation changes our relationships with each other and in the institutions of which we are a part.

# Phase Three: Research Design and Process

The following recommendations reflect some of the main challenges the Monitoring Team faced in developing and carrying out its whole farm participatory research.

## Summary List: Phase Three Recommendations

- 3:1 Determine the areas of research and discuss research designs and work plans as a whole team.**
- 3:2 Clarify each of the research area subteams.**
- 3:3 Make a special effort to include the input of the farmer participants in all aspects of the research phase, including research design, work plans and data analysis.**
- 3:4 Acknowledge both the professional needs of the scientists and the management needs of the farmers when deciding on research focuses, methodologies and work plans.**
- 3:5 Design research work plans to include activities for both scientists and farmers and allow these two avenues of exploration to complement each other.**
- 3:6 Diligently use a systematic and regular reporting process to keep the whole team up to speed on the progress of the research subteam’s work.**
- 3:7 Carefully weigh the benefits and disadvantages of changing the focus and scope of the research once the project is underway.**

### Recommendation 3:1

#### **Determine the areas of research and discuss research designs and work plans as a whole team.**

By the time a project reaches the research phase, the general issues of the project should be clear to everyone on the team. This is especially true if the team has taken the time to 1) become familiar with the biological, financial and social particulars of the participating farms, and 2) articulate its common assumptions and the project’s goals and objectives.

Now the team is ready to determine its specific research hypotheses and to identify the research methods it wants to use to test these hypotheses. As discussed earlier, collectively determining the research focus and methods

greatly enhances the willingness of each person to support the team's research efforts. Although the *research subteams* play the leading role in designing the research for their particular area of focus, all team members should be involved in the final decisions on how to proceed with the research plans.

### **Recommendation 3:2**

#### **Clarify each of the research area subteams.**

For the sake of team communication and work efficiency, take the time at the start of the research phase to clarify, as a whole team, who will be participating in each of the research areas, thus making up the research subteams.

First determine how many subteams the project will have and the general focus of each subteam. Then, dealing with one subteam at a time, determine the scientist and agency members, as well as farmers, who will participate in that area of research, and finally which, if any, other members of the team should or want to be a part of that subteam.

Once the subteam's membership is determined, clarify the roles and responsibilities of the subteam's members. For example, Who will oversee the actual research in each area? Who will do the legwork of collecting and analyzing data? Acknowledge any technical assistants, consultants, paired farmers or other temporary members of the subteam.

Do this procedure for each subteam. Chart out all of this information on paper and make sure each team member has a copy. Revise these listings if or when the makeup of a subteam changes. An annual review of the makeup of the subteams may be helpful as well.

### **Recommendation 3:3**

#### **Make a special effort to include the input of the farmer participants in all aspects of the research phase, including research design, work plans and data analysis.**

Within the Monitoring Project, the farmers' observations and viewpoints were seen as an important source of information for its whole farm research. In some situations, this meant letting the farmers have "first say" during whole team discussions. At other times, it meant soliciting feedback or input from the farmers in separate meetings of just the farmers and a few staff team members.

These strategies were mainly used as ways of making sure the process kept its "farmer-driven" focus. They were also used to curb the scientists' unintentional tendency to dominate the research discussions.

### **Recommendation 3:4**

#### **Acknowledge both the professional needs of the scientists and the management needs of the farmers when deciding on research focuses, methodologies and work plans.**

The fact that whole farm participatory research takes place within the dynamic context of real farms—rather than within the more controlled situation like an experiment station—presents many challenges to designing scientifically valid research. Among the biggest challenges are those involving the different needs and orientations of the scientists and the farmers. Here are some examples of situations in which these differences can arise:

**Scientific versus management priorities:** Farms are dynamic entities and a means of livelihood. A farmer may decide to abandon or significantly change a

## ***The Monitoring Project's Research Agenda***

The following outline summarizes the general research agenda that emerged as the Monitoring Project got into full swing, including the major areas of concern, the specific areas of focus, and work plans for each:

### **Ecological**

- Soil Quality
  - Biological and physical parameters
  - Chemical analysis
- Vegetation
  - Species composition
  - Biomass counts
  - Forage Quality
- Hydrogeology
  - Rainfall
  - Sampling
  - Farm data
- Birds
  - Point counts
  - Informal observations by farmers
- Frogs and toads
  - Point counts
  - Informal observations by farmers
- Stream
  - Habitat evaluation
  - In-stream biota
    - Benthic
    - Fish
  - Water chemistry

### **Financial**

- Develop new sustainability indicators
- Track new indicators
- Herd health analysis
- Energy analysis

### **Quality of Life**

- Develop questionnaires
- Validate questionnaire in separate project
- Analysis of non-farmer team members

## ***Reflections from George Boody, the Project Director***

The subjects we explored and the data we collected proved to be exciting to everyone involved and the synergism we experienced helped foster a high level of enthusiasm for the Project, even among many others not on the Team.

Plus, we were intentionally trying to push the envelope of standard processes and methods for research and monitoring. The different values, visions and professional contexts of individual team members added perspective, insight and cross disciplinary understanding to the questions and findings beyond what was possible in the standard research paradigm.

When we met as a team, which we did up to six times per year, we had stimulating and sometimes difficult conversations about the work and what we were learning. Because we ate together, car pooled, walked the fields and shared stories about our work and personal lives, we came to know and care about each other in ways that went beyond the immediate requirements of the Project.

Throughout the Project it was clear that many team members came to the meetings in part because they were renewing, energizing and supportive. The final evaluations confirmed that shared sentiment. The typical feedback on the evaluations included “getting to know people,” “laughing together” and “finding our commonalities.”

“We attempted to look at the management practice (of management intensive grazing) from a lot of different angles, pool the results, and do the analysis in a way that accounted for the differences attributable to the varying conditions between the six farms and farm families. This whole process was extremely challenging at times, but also incredibly interesting and informative.”

—***Monitoring Project Team member  
Larry Gates***

particular management practice before the end of the research period. This is a factor the scientists need to accept as a possibility; if it does happen they should be prepared to develop “plan B.” On the other hand, the farmers need to respect the scientists’ need for a certain degree of consistency during the research period. Farmers should carefully consider the possible effects of management changes on the scientific research in their decision-making process.

In addition, the scientists should not take their access to the farms and the farmers for granted. They should take care to interact with the farmers in respectful and courteous way. Courtesy should extend to researchers as well. For instance, if the farmer needs to graze a paddock earlier than planned, this information should be communicated to the researchers in a timely fashion so that they can adjust to those changes.

**Long-term versus short-term orientations:** A related challenge is balancing the long-term orientation of the scientists and the more immediate orientation of the farmers. This issue is of particular concern with regard to collecting and analyzing data on biophysical factors such as stream water quality, soil fertility, microbial levels or changes in the vegetative composition of pastures.

From the scientific perspective, the assumption is often that it takes many years of data collection before any scientific conclusions can be drawn about the impact of a certain management practice. Thus the need to analyze collection samples and report on the results of that analysis is less immediate. The farmers, on the other hand, do not have the luxury of waiting for conclusive scientific findings about the effects of a certain management practice. They have a more immediate need for information that can help them manage in the direction of their holistic goal. (This need actually drives the on-farm monitoring process outlined in *The Monitoring Tool Box*.) Thus, analyzing soil or forage samples and getting the results back to the farmers in a timely fashion can be very valuable to their farm management process.

Within the Monitoring Project, the long-term orientation of the scientists, as well as traditional research design, drove the work plan of much of the biophysical research done on team farms. As a result, sampling results were frequently not shared with farmers until the following winter or sometimes several years after it was collected. This delay in obtaining sampling results caused significant frustration among the Team farmers during the Project. Had the Team had a clearer sense of these different orientations, it could have better accommodated the needs of the farmers.

**Pure science versus practical reality:** Because of the practical nature of whole farm participatory research, researchers need to weigh the relevancy of doing things in a scientifically pure way versus taking into account the practical realities of the situation under study. The Monitoring Project’s difficulties in conducting its pasture forage quality research illustrate the gist of this challenge.

Under the assumption that he was to conduct a scientifically valid study of pasture forage quality on the participating farms, the researcher held to a very strict procedure when taking those forage samples. If, when thrown at random, his sampling square landed in an area that contained a mature thistle or dead weeds, he went ahead and included the thistle or the dead weeds in the sample. To the farmers in the Project, including thistles and dead weeds in a forage quality sample made no practical sense because the cows would not be eating those kinds of plant material. Nor were those kinds of plant material representative of the majority of material available for the cows to eat.

Although the farmers voiced their practical concerns to the researcher, he chose to continue to use a more strict scientific protocol. As a result, the forage quality readings from many of these samples were significantly lower than non-

Project samples taken with a procedure more representative of what the cows were actually eating.

Because the Monitoring Project's forage quality data did not represent what the cows were eating, the farmers could not use that data for making management decisions like balancing feed rations or determining pasture management needs. Subsequently, the Monitoring Team decided, as a whole, not to include this forage quality data in its final results report.

Handling the particular challenges of designing whole farm participatory research first requires that everyone on the team understand the larger goals involved. Decisions regarding research methodologies, work plans and internal information dissemination should all be considered in light of these overall goals. Meeting these challenges in positive and constructive ways also calls for a commitment to creativity, flexibility and good communication on the part of all team members. A high level of mutual respect and trust between the farmers and the scientists is called for as well.

### **Recommendation 3:5**

#### **Design research work plans to include on-farm monitoring activities for the farmers that complement the scientific research.**

Because on-farm observation and monitoring is such an important part of the whole farm participatory research process, research designs and work plans need to include on-farm monitoring activities done by the farmers. Combining scientific inquiry with on-farm monitoring in a research design plan has numerous benefits:

- ◆ It builds in recognition of the different needs and concerns of the farmers and the scientists and reduces the opportunities for conflict.
- ◆ The on-farm monitoring observations of the farmers and the information collected by the scientists often augment each other, providing valuable information when analyzing data or interpreting observations.
- ◆ A combination approach helps both the scientists and the farmers avoid falling back into traditional ways of operating in research situations, where the scientists play a more dominate role and the farmers a more passive one.
- ◆ It strengthens the applicability of the project's research results in real life situations, such as for other farmers or for regulating agencies.



*"I'm not eating that thistle!"*

Once the scientists on the subteam have figured out their research activities, determine the on-farm monitoring activities that could complement the scientific research. Also, pay special attention to the management concerns and questions of the farmers with regard to the subject under research when choosing on-farm monitoring tools. (See *The Monitoring Tool Box* for examples of on-farm monitoring tools.)

## ***Tools for On-Farm Monitoring***

The following are just some of the on-farm monitoring tools suggested in *The Monitoring Tool Box*:

### **General Tools**

- journals and field notebooks
- maps and photographs
- natural measure tools like a hand or stride length

### **Quality of Life**

- guided discussions
- values diagrams
- family activities calendar

### **Farm Sustainability**

- reliance on government programs
- use of nonrenewable energy
- creation of jobs

### **Wildlife**

- frog and toad counts
- point counts for birds
- dig for worms

### **Soil**

- aggregate stability test
- probe for soil compaction
- the “fence post effect”

### **Streams**

- document habitat types
- examine the streambed
- survey aquatic organisms

### **Pastures**

- pasture walks
- species surveys
- forage quality analysis

(Plans for additional chapters of the *Tool Box* include “Pests and Pesticides” and “Animal Health.”)

## **Recommendation 3:6**

**Diligently use a systematic and regular reporting process to keep the whole team up to speed on the progress of the research subteam’s work.**

One of the Monitoring Project Team’s biggest challenges during the three years of actual data collection was keeping everyone up to speed on what was happening within the eight research focus areas. Although several strategies were used—such as annual reports from the subteams and occasional large group discussions about certain aspects of the research—an intentional, systematic process was not used until the integration phase. A more diligent effort to use a systematic process for tracking and communicating what was happening with the Project research focus areas would have alleviated a lot of the difficulties experienced by the Team during the research phase.

Below are some suggestions to consider when determining the best reporting process to use:

- ◆ Use the matrix format as suggested in Recommendation 1:5. The matrix provides a format with which to gather into one “place” all the information pertaining to a particular research area. It allows each research subteam to lay out that information in a structured, systematic and communicable way. A subteam’s matrix should include the information gathered by the farmers using on-farm monitoring tools.
- ◆ Whenever possible, use a more lay, or less scientific, style of language and presentation for both written and oral reports. When scientific language is needed, clarify uncommon terms, processes and procedures.
- ◆ Be creative and present the information in ways that accommodate the different learning styles of team members.
- ◆ Make the reports informative but not overly formal or detailed. Remember, more is not always better. Use the reports to convey the essential information and be judicious in deciding what is essential. Fill in with the details as the need arises during discussions.
- ◆ Report observations or concerns about the feasibility of the research design, methodologies and work plan; findings and observations from that year’s research; any new insights and ideas; and any other problems, concerns or questions.
- ◆ Prevent information overload by spreading the subteam progress reports over several regular meetings of the whole team rather than making these the main focus of just one or two regular meetings. Note that it may be appropriate for some subteams to submit progress reports more often than other subteams.
- ◆ Distribute any written reports prior to whole team meetings and encourage all team members to be prepared to discuss these reports at the meeting, either as part of or following an oral presentation.

Make the effort to use these progress reports as tools of communication. They will reduce confusion and the potential for disruptive conflicts during the research phase and provide a comprehensive record of the project’s research activities, which will be useful for the team’s integration work.

### **Recommendation 3:7**

#### **Carefully weigh the benefits and disadvantages of changing the research agenda once the research components are underway.**

Once the research phase is underway, new insights, ideas and questions are bound to emerge. These situations can lead to important discoveries and fuel the creative juices of the team members. Nonetheless, the benefits of incorporating new aspects to the project research agenda need to be weighed against the potential of getting the project off track or of creating an unmanageable scope. And so, before any major changes are incorporated into the project's research agenda, the whole team should be given the opportunity to discuss them.

The Monitoring Team learned the hard way that the inclusion of everyone on the whole team in these discussions is a critical piece of team process.

At various times during the Project, several subgroups generated ideas for modifying their monitoring research or for incorporating new farm management practices into the research scope of the Project. Despite annual review and planning meetings, some of these modifications were not fully explored by the whole team before they were implemented. When not everyone "bought into" the changes, the result was a weakening of team trust and cohesiveness. At other times, decisions were made at meetings at which some of the affected team members were not present. A lack of adequate follow-up communication on occasion created some unpleasant situations that could have been avoided.

To ensure the adequate review and discussion of proposed changes in the research agenda, establish a procedure for handling these kinds of situations. Here is just one suggestion:

1. When the situation arises, the basic information as to the nature of the proposed change is immediately passed on to the Research and Project Coordinators and the Project Director.
2. An alert is then sent to all project team members. The alert includes a set of options that the Team has previously agreed to on how to deal with these kinds of situations. (These options could include a conference call or meeting among those team members who are affected by or have concerns about the changes, a management team meeting or conference call, or a full team meeting.)
3. Upon receiving the alert, Team members vote for the option they feel is most appropriate for the situation and respond quickly with their vote.
4. Upon receiving everyone's reply, the Research and Project Coordinators and the Project Director tally the results and proceed to arrange for the option that received the most votes.

Note, too, that if the whole team decides to make a significant change in or expansion of the project's research scope or process, the project's goals and objectives may need to be revised. And, again, if any new members are added to the team, they will need to be brought up to speed on all aspects of the project and helped to feel welcomed and a part of the team.

## **Phase Four: Integration and Outreach**

### **Summary List:**

#### **Phase Four Recommendations**

- 4:1 Devise a workable process that allows the team to invest the time and effort needed to do its integration work effectively.**
- 4:2 Clear outreach activities should be a part of the initial project goals and work plan. Another option is to consider them as part of a new project.**

The culmination of a whole farm participatory research project is its integration and outreach phase. This is the point at which the team steps back from the more specific focus of the research phase and once again adopts a wider view.

## *Reflections from George Boody, the Project Director*

The interaction among the different perspectives and disciplines also led us to monitor new approaches. At one winter meeting we tried to plan the season’s monitoring activities by developing biological plans for each farm. That effort, coupled with a car conversation on the way to the meeting between farmers and biologists about birds, led us to decide to test the impact of rest paddocks on bird habitat.

Initially, we approached the idea with an eye toward practicality for the farmer and the impact on birds. But very quickly the exploration expanded to include the interdisciplinary possibilities and impacts. We looked at the connections to soil quality and to the quality of life of the farmers. We also examined the financial impacts and the impact on forage quantity, especially when the area under rest had been used as a livestock over-wintering area.

“The pasture rest areas work of the Monitoring Project is a great example of the flexibility and ingenuity that the whole farm participatory research process allows. The standard research process begins with a hypothesis and is confined to either proving or disproving that hypothesis. The whole farm participatory research process gives the research team permission to shift gears when new ideas arise. It makes room for a path of scientific discovery in which breakthroughs and innovations come about by the process of interdisciplinary interactions.”

—*Monitoring Project Team member Richard Ness*

- The team’s integration work involves the following three activities:
1. the *evaluation* of the basic research data in relation to the subteams’ preliminary analysis and the research hypotheses,
  2. the *integration* of that information into a cohesive body of knowledge and insight that reflects a holistic perspective, and
  3. the *preparation* of written reports and publications that clearly convey the team’s integrative analysis of its research.

Questions such as the following may help the team understand the implications of its findings more clearly, and enable it to more effectively articulate those findings to others.

- ◆ What preliminary conclusions can be made with regard to the specific research focuses of the project? How do these findings relate back to management on the farm? To the biological, financial and social context of each farm?
- ◆ What connections can be made between the different research area focuses? Between the different disciplines studied?
- ◆ What are the implications of the project’s research results with regard to the original farmer questions? To the project’s goals and objectives?
- ◆ What are the larger or real-life implications of this information? For other farmers? For further scientific study? For government regulatory policies?

Although some public outreach may have occurred already in the course of the project, it can become the team’s primary work once most of the integration work is completed. At this phase of the project, outreach activities focus on informing others about the project’s findings and promoting the distribution and use of its products.



*Grassland nesting birds appreciate the efforts of farmers like Art Thicke, who found this nest in a paddock that had just been grazed by his dairy cows.*

## Recommendation 4:1

### Devise a workable process that allows the team to invest the time and effort needed to do its integration work effectively.

A thorough and thoughtful integration of a whole farm participatory research project's results requires time and a combination of strategies. The Monitoring Team found the following strategies helpful for its integration work:

**An integration matrix:** The matrix format proved to be especially useful to the Monitoring Team as an integration tool, making a challenging task doable and fun.

Some possible categories for an integration matrix include the following:

- ◆ Research Area
- ◆ General Comments
- ◆ Specific Scientific Results
- ◆ On-farm Monitoring Information and Observations
- ◆ Linkages to Other Research Areas
- ◆ What We Know
- ◆ What Needs Further Study

Under the column labeled "Research Area," list each of the specific research activities of the subteam. Multiple activities under the same general focus area are listed in blocks of rows, with each of these activities receiving its own row.

For example, a subteam researching the impact of a management tool on streams may have several general areas of focus, such as "Water Chemistry," "In-stream Processes," "Stream Banks," and "Biotic Communities." Each of these general areas might be examined from a number of different angles. The research on water chemistry, for instance, might look at N and P, fecal coliform, turbidity, dissolved oxygen and temperature, and pesticides and heavy metals. Each of these issues would be assigned its own row, which includes the words "Water Chemistry" written in brackets above the row's label. All of the activities dealing with "Water Chemistry" are listed before listing those of the next general issue, "In-stream Processes."

Each research subteam develops its own integration matrix before sharing it with the whole team.

**Large group work sessions:** The integration process requires a substantial amount of large group work. Once each of the research subteams has done what it can with its matrix, the matrix is presented to the whole team for discussion. The integration matrix provides the whole team with a clear, structured format around which to discuss the subteam's findings, influence its conclusions and help fill in any gaps in the matrix. This process is done for each of the project's research areas.

**An integration team:** An integration team is a small, representative group of team members who work with the Research Coordinator to take the integration process to its next level. That next level involves "digesting" the information from all the subteam matrixes and formulating the team's overall conclusions for the project. The creation of a more general integration matrix in which all of the project's research areas are summarized may be useful for this task. After the integration team has prepared the first version of this summary matrix, it is presented to the whole team for discussion and revision.

## Project Findings

Below is a summary of some of the key findings that emerged from the Monitoring Team's integration process. The full details of the Monitoring Project's findings on the broad ecosystem and socioeconomic benefits of management intensive grazing can be found in the Project's comprehensive report.

1. Management intensive grazing can improve soil quality more rapidly than continuous grazing or row cropping. We found:

- increased soil biological activity, as measured by earthworm population counts and soil microbial biomass C;
- increased soil structural integrity, as measured by soil aggregate stability;
- improved water infiltration;
- greatly increased surface cover, suggesting greatly reduced soil erosion;
- low levels of deep nitrate in heavy soils in overwintering areas;
- rapid increases (two to three years) in soil organic matter in the top three to four inches and in varying soil types.

2. Management intensive grazing can be a viable tool for the management of riparian corridors. In fact, we found that it can actually improve the physical and water quality characteristics of streams and stream reaches, especially in comparison to conventionally-grazed pastures or rested areas allowed to grow trees in former prairie areas. Specifically, we found:

- less turbidity;
- lower fecal coliform, improved stream bank cover and slope;
- reduced fine sediments on the bottom of the stream.

3. Management intensive grazing can create nesting habitat for

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endangered grassland bird species.

We found improved grassland bird species habitat:

- when compared to continuous grazing and row-crop management systems;
- with the use of extended rest periods in selected paddocks.

4. Management intensive grazing can create the hydrologic system needed to produce habitat for common amphibians in Minnesota. Our findings are based on the study of physical conditions and breeding call surveys.

5. Management intensive grazing can improve herd health. We found decreased veterinary costs without negative impacts to herd health or production.

6. Management intensive grazing can improve the farm family’s quality of life. We found that

- it tends to create a lower stress life-style on the farm;
- it can lead to a sense of personal empowerment for those members of the farm family actively engaged in the grazing management;
- practitioners of the system benefit from an active and intentional support network that enables them to share ideas and experiences.

“For me the most important message from the Monitoring Project is that individual farms can have a measurable impact on environmental quality. Most of us do not appreciate the impact we as individuals can have locally on the landscape. I think this message is valuable because if each of us, whether we live on a farm or in a city, make small changes in our activities, we can contribute to the improvement of the environment. Changes do not have to be dramatic. A farmer who makes an effort to protect the area near a stream or a suburbanite who reduces lawn fertilizer application can make a difference—however small.”

—Monitoring Project Team  
member Bruce Vondracek

The integration team also works with the Project Writer to translate the information from the various integration matrixes into a cohesive, narrative form. This narrative uses the particulars of the various research components to illustrate larger issues, connections, conclusions and recommendations the team wants to present in its various publications.

The exact nature of the integration team’s work in this document development task is up to the individuals involved. In some cases, integration team members may only provide developmental guidance and review preliminary drafts. In others, it may be appropriate for members to have more hands-on involvement. And, while any documents drafted in this process go back to the whole team for review and clarification before they are put into their final publishable form, the integration team takes the most active role in their development and review.

**Public events:** Public events, such as educational on-farm field days, public presentations or workshops, are obvious outreach tools. But they are also excellent integration tools. The clearly defined context of such events, as well as the preparation work they require, often serve as good motivating and focusing devices for sorting through information and assessing its meaning.

If these events are to be helpful to the whole team’s integration efforts, be sure to provide for some kind of feedback process by which those who took part in the events can share their experience and insights with the whole team.

## Recommendation 4:2

**Clear outreach activities should be a part of the initial project goals and work plan. Another option is to consider them as part of a new project.**

- Now that we know this information, what do we do with it?
- How do we share this information with others?
- What kind of outreach activities are called for?

The integration and outreach phase may seem like the natural time to ask questions such as these. Ideally, however, they are first considered during the project development process.

If outreach activities are to be a part of the work plan of a whole farm participatory research project, they should be articulated in the project’s initial goals and objectives and planned for in its budget. Even though the exact nature of the outreach activities may not be clear until the later phases of the project, planning for them well in advance will help ensure that they are carried out successfully. Outreach activities must also be backed up by a willingness on the part of team members to commit time and energy to these activities. Otherwise, there is no point to budgeting for them or including them in a project work plan.

Another way to deal with outreach activities is simply to consider them as part of a new project. This may be the most appropriate option if new ideas are generated late in the project or if a significant number of the current team members are unable to be involved in the follow-up plans. If this is the route the team chooses, it should clearly identify those activities that are needed to wrap-up the current project and those activities that constitute a new endeavor.

# Phase Five: Project Evaluation and Wrap-Up

The main focus of the fifth and final phase of a whole farm participatory research project is the team's comprehensive evaluation of the project. This includes an honest assessment of the quality of its work together as a team. Phase five is also a time to wrap-up any loose ends in the team's work and to bring closure to the project. In addition, this phase might be an appropriate time for team members to share any possible follow-up ideas or spin-off projects they plan to pursue upon the conclusion of the project.

## Summary List: Phase Five Recommendations

- 5:1 As a team, determine an appropriate evaluation process—one that fits the scope and content of the project as well as the team's interpersonal dynamics.**
- 5:2 Wrap-up the project in such a way that offers a clear sense of closure and celebration for all involved.**

### Recommendation 5:1

**As a team, determine an appropriate evaluation process—one that fits the scope and content of the project as well as the team's interpersonal dynamics.**

Under the leadership of the Project Director, the whole team discusses the process it wants to use to evaluate the project. This process is tailored to fit the scope and content of the project, as well as reflect the interpersonal dynamics of the team. Use questions like the following to focus this discussion:

- ◆ Does the team want to take a formal or informal approach? Or is some combination of both styles appropriate?
- ◆ How detailed or comprehensive does the team want the evaluation to be?
- ◆ Is anonymity a concern to anyone on the team?
- ◆ Who does the team want to lead the evaluation process?
- ◆ Does the team want the evaluation summarized in written form?



*Monitoring Project farmers Mike and Jennifer Rupprecht were happy to host the attendees of the Center for Holistic Management's national meeting on their farm near Lewiston.*

For the actual project evaluation, here are some of the issues and questions the team might want to address:

#### Goals and objectives:

- Did the team meet its goals and objectives for the project?
- Did the project turn up any surprises or unexpected outcomes?

#### Project phases:

- Was the project's development process given adequate consideration?
- Were team members satisfied with the project's team development efforts?
- What were some of the key problems or successes in the research phase of the project?
- Were team members satisfied with the way the integration process was done?

## Spreading the Word

Sharing information about its research findings and its experience with the whole farm participatory research process has been the focus of the Monitoring Project Team's follow-up activities. Some of these activities took place within the time frame of the Project; others represent post-Project efforts and separate follow-up projects.

Here are just some of the Team's efforts:

- As of the end of 1998, Team members had given 55 presentations, reaching both in-state and national audiences. The Team also held over 12 field days, reaching local, state, regional and national audiences totaling more than 560 people.
- Over 400 copies of *The Monitoring Tool Box* have been distributed. The newsletter *Close to the Ground*, training workshops and field days continue to promote the use of on-farm monitoring and the development of local monitoring teams.
- The publication *Monitoring Sustainable Agriculture With Conventional Financial Data*, by Team member Dick Levins, has been distributed to over 700 people. Dick continues to present the Team's financial monitoring work to agricultural professionals across the country.
- The Monitoring Project's financial sustainability analysis system has also influenced the work of several Midwestern agricultural economists, including a group from Kansas State University.

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## Project management and administration:

- What were the strengths and weaknesses in how the project was managed and administered?
- Was the project adequately staffed and funded?
- Were the project's staff and funding adequately managed?

## Team dynamics:

- How well did the team function?
- Was this a satisfying or enjoyable experience for each of the team members?
- What could have been done to improve team dynamics and functioning?

## Self-assessments:

- How would each team member evaluate their own personal and professional contributions to the project?
- How would each team member assess their interactions with or behavior toward other team members?
- How would each team member assess their fellow team members' interactions with or behavior toward themselves?
- What aspect of the project was most personally challenging for them? Most rewarding?

## Recommendation 5:2

### Wrap-up the project in a way that offers a clear sense of closure and celebration for all involved.

Regardless of whether or not follow-up activities are part of a project's goals and objectives, the specific research project under which the team has been convened needs to be given a clearly identifiable conclusion. The team needs to identify the criteria of that conclusion so that everyone knows when their obligations and commitments to the project are fulfilled and done.

Simply letting a project's ending fizzle or remain in limbo can create an unsettled feeling among the team members. It also robs the team of the clear opportunity to acknowledge its accomplishments, to celebrate its efforts, and to pay tribute to one another. Marking the end of the project in some clear and celebratory way gives team members the clear sense of closure they need to feel good about their participation and efforts.

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- The article “Making the Transition from Conventional to Sustainable Agriculture: Gender, Social Movement Participation and Quality of Life on the Family Farm,” by the Team's quality of life researcher Alison Meares, appeared in the Winter 1997 issue of *Rural Sociology*.
- The soil research team of Deborah Allan and Jay Dorsey exchanged strategies and preliminary findings with groups from around the country working on soil quality measurements. These include the Center for Holistic Management, University of Wisconsin, Soil Quality Institute, Soil Tilth Lab, North Dakota State University and Illinois Soil Quality Initiative.
- In addition, Allan and Dorsey provided a supporting role in the MISA-funded development of the *Soil Management Guide*, which is distributed through University of Minnesota Extension.
- The Mike and Jennifer Rupperecht farm and the Monitoring Project were featured in the October 1996 issue of *Successful Farming* magazine; the Dan and Muriel French farm was featured in the mid-March 1995 issue.
- The January-February 1996 issue of the *Minnesota Conservation Volunteer* covered the Monitoring Project in a story called “The Diversity of Life on the Farm,” and The November-December 1998 issue featured another Monitoring Project story titled, “The Stream Team.”

# Conclusion

Monitoring Project director George Boody offers some concluding thoughts about the Project, the Team and the recommendations put forth in this report:

The Monitoring Team came together to document the impacts of management intensive rotational grazing on the ecological, financial and quality of life goals of the six participating farm families. We also wanted to identify appropriate on-farm monitoring tools and to utilize a whole-farm, participatory approach to agricultural research.

In many respects we were successful. The Team created and continued to refine a successful research process that allowed for team participation, honored the value of observation and analytical methods, and enabled us to document changes and holistic relationships in the field and among people. We also produced some useful and well-received materials meant to teach and promote the use of on-farm monitoring and whole farm participatory research.

But in other areas of our work, we came up short of our expectations. Some of our research efforts were not managed as well as they should have been. We had issues on which we could not come to agreement, despite our many hours together. Our intention was to interact with each other in ways that were holistic and team oriented. When we fell short of this intent, we had to temper that seriousness with ample doses of humor, patience and forgiveness.

Overall, however, we were truly able to talk with each other across our disciplines and our perspectives as researchers, farmers, advocates, agency staff, students, volunteers or consultants. We learned through our work on the Project that it was the process of relationship and interaction that was powerful and led to changes in our personal or professional lives, as well as on the land. At Team member Helene Murray put it: “We learned that together we were able to make more significant progress than we could have on our own.”

And so, once again, we assure you that the recommendations in this report grew out of our collective reflections on both our successes and our failures. In the words of Team member Beth Waller, “It is important to share the information with others as, ‘This has been our experience. This is what we found.’” It is out of this spirit that many from the original Monitoring Team continue to help others form monitoring groups that bring individuals together in ways meaningful to each person. And, it is with this spirit that we share this report with you.

Do we know all the answers?

No. If anything our research and experience with on-farm monitoring and whole farm participatory research has produced more questions than answers.

Did we learn a lot along the way?

Yes. We have tried to share some of that with you in this report.

Did many of us on the team experience personal and/or professional change as a result of participating in this project?

Yes. As was said in this report, much of the satisfaction of participating in the Monitoring Project came from getting to know each other and making friends.

Did changes occur on the land?

Yes. And they continue to change as the Monitoring Team farmers, spurred in part by their experience with the Project, explore, monitor and work toward attaining the ecological, social and financial goals for their farms.