

**INDICATORS OF SUSTAINABILITY
IN WHOLE FARM PLANNING:
PLANNING TOOLS**

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KANSAS SUSTAINABLE AGRICULTURE SERIES, PAPER # 3

ABSTRACT

This paper provides a brief description of the tools as well as approaches used in whole farm planning. An extensive appendix lists whole farm planning resources; decision-making software; accounting, management, and mapping software; and software and other resources for nutrient and soil organic matter management.

We thank the other members of our research team for their assistance, encouragement, and editing: David Norman and Bryan Schurle (Agricultural Economics), Leonard Bloomquist (Sociology, Anthropology and Social Work), Jerry Jost (Kansas Rural Center) and Hans Kok (Agronomy). We also thank Kansas State University Agricultural Experiment Station for funding this project.

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Wisconsin Interactive Soils Program for Economic Recommendations

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INTRODUCTION

Planning is important. People need to know where they want to go, if they ever want to get there. As seen from *Indicators of Sustainability in Whole Farm Planning: A Literature Review* [Freyenberger et al. 1997], numerous frameworks or approaches to whole farm planning are possible and are being explored by various groups. This paper provides a brief discussion of some of the tools and the approaches being used for farm planning. It notes their strengths and weaknesses, and explores the idea of combining two or more tools. The appendices of this document provide an annotated bibliography, including contact information for books, courses, and software currently available that could be used for farm planning.

Do farmers want or need planning tools? As part of this project, our research group conducted four focus groups with farmers whose orientation ranged from conventional to organic. Some of the questions posed to the groups were whether planning tools were used, were they useful, and what sort of tool would be useful in the future [Norman et al. 1997]. The responses indicated that several people used computer software for financial record keeping and analysis purposes (see Appendix B for examples), including the Kansas Farm Management Association services for record keeping and analysis; two received the latest market and weather forecasts; and most had a soil conservation plan prepared by NRCS. When asked what tools would be most useful, they described the importance of personal interaction with each other and with other farmer-mentors. A few individuals had been through one or more Holistic Management (HM) courses and mentioned it as useful because it helps them think through issues. They seemed to be reluctant to

embrace an elaborate record keeping system for the purposes of whole farm planning; a scoring system that would compute an index, ranking, or other number; or any other time-intensive activity without clear pay-off in terms of new information. As an associate from Minnesota who works in this area aptly stated, some of these tools have a high "thud" factor (the sound of a large notebook falling on the table).

Thus, the following ideas are presented with some enthusiasm for the *concept* of whole farm planning but reservations about the *reality* of whole farm planning. Most of these tools have not been used by large numbers of people, but almost all of them have been tested or are in use now on a small scale. In addition to the discussion that follows, all of the tools are described briefly in the annotated listing in Appendices A through D.

GOAL SETTING / FARM OVERVIEW

One of the topics generally *not* covered in undergraduate agricultural education curricula is "putting the pieces together," or whole farm planning. Similarly, it is rare to find a farm with a written version of a business plan, mission statement, goals, objectives, implementation strategy, or time line although most farmers could tell you in a general sense where they are going. Without a clear sense of where the farm is going, any type of monitoring effort is like following a road map without a destination in mind. This desire for assistance with farm planning is beginning to be met to various degrees by for-profit consultants, nonprofit organizations, and the university community.

Assistance in business plan development can be found at some universities in the economics departments and at others in the business management department (see Turok, 1987 for an example of a helpful handbook). Private consultants and shelves of business management books are available for businesses in general but often are not targeted to the farming community. Most agricultural economists offer assistance on individual farm enterprises or a technique, such as marketing, rather than goal setting and combining the enterprises into an overall business plan that involves personal goals, professional goals, family goals, environmental concerns, and quality of life considerations.

A novel approach is taken by an organization called the Center for Holistic Management, based in New Mexico. Trainers representing the ideas generated by this organization over the past 10 years present a "holistic" management model. The starting point of the model is the "whole" under management, which includes the physical resource (the farm), financial resources, and the people involved in the farm. The three-part goal is determined in relation to the whole under management and four ecosystem foundation blocks. Various management tools then are used to develop testing and management guidelines for decision making. A plan-monitor-replan cycle is promoted, which fits well with the dynamic nature of farming in general and the need to continually adapt. Many of the HM courses and training materials are geared towards land managers using grass-based systems (livestock, rotational grazing dairy systems), but the concepts have been adapted to other farming enterprises.

Ranching for Profit, a school sponsored by Ranch Management Consultants, also in New Mexico, focuses on goal setting, assessing the situation, setting priorities, and outlines steps to achieve ranch goals. It was developed for the ranching/grass-based farming community. In comparing the two systems, Ranching for Profit has a strong ranch management focus, with more information on financial planning, whereas Holistic Management focuses more on the process of decision-making with goal oriented monitoring that covers economic, environmental and social aspects.

Both of these courses are apparently meeting a need not yet provided by the academic/university/extension community, because they are taught largely by private consultants. However, their popularity in recent years however has encouraged the university community to get involved. Several universities have hired or trained individuals to teach HM concepts within the system.

WIRE (Western Integrated Ranch/Farm Education) was developed in Wyoming as a collaboration between the University of Wyoming and the Western Regional Sustainable Agriculture Research and Education Coordinating Committee. It was modeled after a program developed by Texas Cooperative Extension called "Total Ranch Management" and includes elements also found in the Holistic Management and the Ranching for Profit courses. Goal setting is emphasized as part of an eight-step planning process, and worksheets are provided to help inventory the farm resources, set goals, and monitor results.

Balanced Farming and Family Living was a program offered in Kansas from 1987 through 1991 to more than 250 farm families in 21 counties. Based on farm and group study goals, training and services were offered to these families by Cooperative Extension agents and subject matter specialists. Farm management was an area of emphasis in the program but was not necessarily integrated with the subject matter areas (e.g., animal science, agronomy). A special grant was needed to cover the cost of the program, and only remnants of the program exist today. The evaluation of the program by the families who participated was quite positive, again indicating a desire for something like this again in the future.

Three of the approaches (HM, RFP, and WIRE) reviewed above include some sort of monitoring activity along with an emphasis on goal setting and whole farm planning. Other tools reviewed focus primarily on the monitoring side and assume that a plan has been developed or is in place. These will be reviewed in the following section.

SCORING INDICATORS OF SUSTAINABILITY

The Ontario Environmental Farm Plan offers what is probably the most detailed scoring system of the materials reviewed. Twenty three worksheets cover everything from water wells to wildlife or crops. Training has been offered to 10,000 Ontario farmers to guide them through the process. One incentive for doing so is a cost-share program and tax credits for farm improvements. The positive aspects of this approach are that it is thorough, the questions leave no stone unturned, and a straightforward ranking system (1-4) quickly identifies places where improvement is needed. The downside to this and other similar approaches is that the way the

questions are asked imply some value judgements and assumptions that the best-management-practices (BMPs) and pollution prevention solutions are all known. In fact, some BMPs are highly debatable, and alternative approaches may provide better environmental protection or economic gain. In this sense, we found this tool somewhat rigid, as well as long, so it had a high "thud" factor.

Farm-A-Syst worksheets are available in most states for farmstead evaluation (focusing mainly on farmstead water quality risks). The NRCS Farm Evaluation sheets cover pasture, cropland, and woodland. Another limitation of these "checklist" approaches is that they provide a snapshot view of the farm at a certain point in time but do not promote on-going monitoring and evaluation of progress, although the questionnaires could be repeated to compare a baseline year to a point in the future. Another limitation is that most questions are asked at the *field* level. A farmer may have a hard time extrapolating and integrating the questions to the *farm* level. Checklist evaluations promote reactive management as compared to being proactive and anticipating effects.

PLANETOR is a computer-based environmental assessment tool. Assessment is based on data provided on an individual field basis. Soil type, weather, and lay of the field are all considered along with the management practices used on the field in assessing environmental risk to farming situations. PLANETOR is able to handle alternative scenarios so it can be used as a planning tool. One problem is finding the information needed to keep its databases current with the latest chemicals in use.

A monitoring project sponsored by the Land Stewardship Project, in collaboration with the University of Minnesota, uses several monitoring tools that bring farm families into the *process* of monitoring, with help from subject matter experts. Examples of monitoring priorities include stream bank condition; stream water quality; the presence of wildlife (bird counts, amphibians, fish); and soil quality. Time is the main limitation with these activities, and the natural year-to-year variability makes overall trends difficult to detect without continued, long-term effort. The participatory nature of the project makes it fairly unique among those reviewed by our group.

A pesticide and nutrient management "yardstick" is now being used in the Netherlands. In the United States, the Institute for Agriculture and Trade Policy, in cooperation with the Center for Agriculture and Environment, in the Netherlands, have translated the information for us in the U.S. Basically, nutrient budgets are developed at the farm level, with the goal of no net export of nutrient from the farm (except as grain or meat). Similar record-keeping budgets are used to track pesticides.

The Wisconsin Soil Health Score Card is a more abbreviated attempt to monitor field conditions. Criteria for the score card was generated via farmer interviews and classification of soil health indicators. It is a fairly simple, consisting of 43 questions that span the topics of soil properties, plant health, animal and human health, and water quality. A rating system of 0 to 4 is used, and scores are multiplied by a weighting factor to come up with a total "Soil Health Score."

RECORD KEEPING AND MAPS

Numerous farm accounting systems are available commercially and won't be reviewed here (see Appendix C for examples). They range from the simple to the complex (those that combine financial record keeping, field records, and maps). The trade-off with all of these seems to be between capacity and price, although expensive does not always translate into the best. Another trade-off is level of complexity and detail vs. the time it takes to input all of the data. Some of the programs are menu driven, which takes away much of the typing time. The fact that the various spreadsheets and field summaries are cross referenced saves time when generating year-end reports. But, there is still the data entry hurdle that makes many of these seem more like a "commitment" than a "tool."

A record-keeping tool of some sort is essential to good farm management. Financial record keeping and tracking helps you know which enterprises are making or losing money and enables you to run "what-if" scenarios. Maps, whether from NRCS, FSA, hand-drawn, or computer-generated are wonderful tools and can help you visualize the land resource. In some parts of the country with environmentally sensitive areas, nutrient and pesticide management plans and the record-keeping associated with these plans are required or encouraged through the use of economic incentives. If this trend continues into the future, some of this record keeping is inevitable. In addition to the record-keeping tools covered in Appendix C, software has been developed in many states to keep track of nutrient budgets, especially from manure sources, and one even tracks long-term changes in soil carbon. These are described in Appendix D.

The dilemma with the record-keeping systems is the time investment up front vs. the information gained. Also, the diversity of software packages makes farm-to-farm comparison difficult, unless a concerted effort is made within a group of people to use the same program. A record-keeping system that fits your operation for planning and monitoring needs will encourage you towards your goal.

MAKING DECISIONS

Many of the tools discussed above allow you to run hypothetical scenarios, either explicitly or by tricking the system and using hypothetical farm data rather than actual field records. However, most tools don't provide guidelines or methods to help you make a decision among several options or weigh their relative strengths and weaknesses. The testing guidelines provided within the HM framework do allow you to use predetermined criteria based on personalized farm goals and to "test" each decision or possible scenario.

Systematic decision evaluation tools are also available as software. One simple, straight-forward procedure is provided in software called DecideRight (see Appendix B). This menu-driven software does on the computer what also could be done by hand: list possible alternative solutions to a question or problem; list and rank the criteria in order of importance related to the decision; and compare each alternative solution to the criteria, resulting in a final ranking of the alternative solutions. DecideRight often comes up with the same ranking that an individual using

the intuitive process would, but the program offers explanations for the rankings and allows for a sensitivity analysis of the various criteria used in the process.

The Environmental Protection Agency has developed "Adaption Strategy Evaluator 2.0" to allow for a multicriteria decision-making approach to agricultural policy. This can allow groups to use a more transparent decision-making and negotiation process and other criteria to enter into the decision making beyond simply a cost-benefit analysis. Charting data in various forms also allows groups to examine the issues from several angles and allows for visual assessment of alternative solutions to a problem. The goal is to facilitate a group decision-making process towards an "optimal" overall solution, rather than settle for satisfying one criterion at the expense of another. The limitation of the software is that it is designed for policy analysis not whole farm analysis, and the translation into a whole farm tool may result in a program in which the results are self-evident -- that is, there is no new information of value for the farmer at the end of the analysis.

MENTORING, STUDY CIRCLES, AND FARM MANAGEMENT CLUBS

One of the thoughts raised during the focus groups meetings was the importance of information from other farmers, one-on-one conversations, and learning from other farmers who had tried a practice and worked the bugs out. In other settings, farmers have talked about the value of having a peer group to use as a sounding board for ideas, sometimes called a "farm management club" [Frantzen 1995]. As a follow-up to HM courses, participants are encouraged to stay in touch with one another through management clubs. Independent of the HM courses, grazing groups in some states often form "grazing clubs," and schedule pasture walks and winter discussions as a small group. On-farm research groups are also common (see the Practical Farmers of Iowa for example), and within Kansas, farmer clusters associated with the Heartland Network provide examples of farmers learning from each other in a group context [Norman and Jost 1997]. In all of these examples, nonprofit organizations, Cooperative Extension, and university personnel may play a role. Their most valuable role as nonfarmers would be to facilitate the origination of the group, technical backstopping on an as-needed basis, and possibly some on-going logistical support.

The idea of learning-focused organizations has been formalized by the Study Circle Resource Center, in Pomfret, CT [SCRC, 1994]. Materials are available for organizers and members of new or existing study circles, and topic-specific curricula are available in some areas. One possible route that whole farm planning could take is to organize study circles focused on the topic of farm management, farm planning, and assessment. The *group* then would decide which planning tools to use, how to use them, and how to combine them and then how to use the results generated. This has several advantages over individual use of tools, including sharing ideas and hints and the creativity generated when two or more people meet to discuss and idea or concept. This also would allow the individuals to learn from each other's farms, as well as their own farms, providing a multiplier effect for the effort expended. Creative solutions to environmental and other problems might be arrived at, and study circles with a geographical basis, e.g., a

watershed, also would have the ability to implement watershed or other community-level solutions more easily.

SUMMARY

We have not found the perfect tool. It is hard to imagine that one could be created that could be everything to everybody, but maybe it is possible for a "toolbox" to be assembled, from which you could choose components tailored to your farm. The essential elements of a good planning tool have been summarized by Kemp [1996], as part of a project in the Great Lakes region. Farms are complex physical, financial, and social entities, and they are dynamic, never staying in the same place for very long. The context within which each farm operates, the extended family, the community, the state, the country, and international constraints and opportunities also are constantly changing. Any planning tool has to deal with the dynamic, multilayered, complexity inherent in farming.

We present here what we found to be available or in use now, or proposed for use in the very near future. It is our sense that farm planning requires elements of each of the types of tools reviewed. For example, goal setting that considers the farm's and individual's resources and participatory planning, as presented in the HM framework are important beginning points. Monitoring the farm's financial status, productivity, and environmental soundness needs to be included. Record keeping will be part of this monitoring effort. Decision making that considers many factors, not just the bottom line, could be easier with some of the tools described. And finally, having a group of peers with which to discuss options, problems, solutions, and dilemmas could be the most important piece of all.

There are probably as many approaches to farm planning as there are farmers, and so the rest of this document describes the resources we had located at the time of publication and information on where to go to find materials. Enjoy.

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Appendix A: Books, newsletters, and courses that focus on whole farm planning and/or environmental monitoring.

Balanced Farming and Family Living

Extension Agricultural Economics

Kansas State University

785-532-5823

Balanced Farming and Family Living (BFFL) is a program that has an older history but had a special life between 1987 and 1991 when an extension focus was given to the program. Monthly BFFL newsletters were distributed during this period. In 1990, two 3-ring binders were put together from the experiences of agents and specialists who piloted the BFFL program. These were resources for agents who wished to begin a BFFL program in their county.

The BFFL program chose eight counties per year for 4 years where 10 - 15 farm couples were identified who agreed to meet monthly for input from agents, specialists, and others and discussion about farming and farm living. During these times, a lot of material (subject selected by the group) was covered. The focus was on farm management, but materials from agricultural economics, agronomy, livestock, and family living were included. Extension put a lot into the program, and the groups had a forum for dialogue about materials/options presented. It was a highly personalized approach, with the BFFL focus remaining on this select group of couples over a year (sometimes extending longer) period.

Funding for BFFL ended in 1991. However, some county agents have continued to use it in their programs.

Crop Rotation Options Program (CROP): A Whole Farm Planning Tool.

Jon Baldock (AGSTAT, Verona, WI; 608-845-7993; agstat@aol.com)

Josh Posner (Dept. of Agronomy, UW-Madison 608-262-0876; jlposner@facstaff.wisc.edu)

Derek Fisher (Dept. of Agronomy, UW-Madison 608-262-0390; drfisher@students.wisc.edu)

This software is being developed at the University of Wisconsin to provide a management tool that integrates knowledge across disciplines to provide a whole farm perspective of a dairy farm. CROP computes nutrient budgets (including losses to the environment), soil erosion, dairy herd feed requirements, as well as profitability on a whole farm basis. This could be a useful tool for dairy farmers in other regions of the country, especially where nutrient budgets for manure are needed on a field by field basis. At this time, the program does not include goal setting or mapping components. The software is scheduled to be distributed through WISPLAN in early 1997.

Farm-A-Syst

Extension Agricultural Engineering

Attn: Danny Rogers - 785-532-5813

237 Seaton Hall,

Kansas State University

Manhattan, KS 66506

Farm-A-Syst, the Farmstead Assessment System, in Kansas is a cooperative project of the Cooperative Extension Services, KSU, and the Kansas Department of Health and Environment. It is an action program for safe drinking water. The goal of Farm-A-Syst is to help you protect the groundwater that supplies your drinking water.

The packet consists of a set of 10 fact sheets and 12 worksheets. The fact sheets provide information on factors that influence pollution risks, health and legal concerns related to specific pollutants, and sources of additional information or assistance. The worksheets help you evaluate the groundwater pollution potential of your farmstead activities and structures and determine how effectively these practices protect your drinking water. The last two worksheets help you evaluate soil and geologic factors that influence pollution and compare potential contamination sources to see where improvements are needed most and determine where to spend your time and money most effectively to protect the groundwater that supplies your drinking water.

Information is presented in a clear way. Worksheets require a person who knows the local situation. Considering its goal and its assumed Best Management Practices, Farm-A-Syst does a good job. The Kansas program was adapted from materials that originated in Wisconsin and Minnesota.

Farm-A-Syst has a national world wide web home page: <http://www.wisc.edu/farmasyst/>, which includes a national directory and other information related to the system.

Holistic Management .

Center for Holistic Management

1010 Tijeras NW

Albuquerque, NM 87102

<http://www.holisticmanagement>

E-mail: chrn@holisticmanagement.org

505-842-5252

There are three major print resources related to HM: the *Holistic Resource Management* book by Alan Savory (1988); the *Holistic Resource Management Workbook* by Sam Bingham and Alan Savory (1990); and the Center's newsletter, the *Holistic Management Quarterly* (which is soon to switch to a bimonthly newsletter). You can view the web home page or request the introductory newsletter, whose back page has a full list of the Center's resources. Registered Educators are spread across the world.

The book (560 pages) was written after years of learning by Mr. Savory. It is becoming a bit dated as new learning continues to improve on this management model, but its breadth and scope are very relevant in thinking about systems and decision making. (A revised edition or new book is in the process.) The HM system gives farmers and others the means of evaluating decisions based on monitoring indicators and testing guidelines. Up front, the farm unit has to identify its goal (set out in a three-part manner), and then all decisions are based on movement toward the stated goal.

In 1990, Sam Bingham and Alan Savory wrote the workbook to complement the text. It includes financial and biological planning and monitoring. Financial planning includes planning income and expenses. Marginal reaction is used to decide between two activities when resources are limited and to maximize resources used. Gross margin analysis is used to be sure each activity is bringing a return over inputs. Financial monitoring is done on the same worksheets (or spreadsheets) on which planning was done. This allows both incomes and expenses to be monitored according to what was planned. This is usually done on a monthly basis. The financial planning and monitoring system presented would fit into any type of business system. HM Financial Planning software became available in mid-1996. Initial reactions indicate that it simplifies the old worksheets method, allowing easier and quicker access to records and/or alternative options for decision making.

The biological planning and monitoring system is presented with a definite rangeland or pastureland bias, however, the biological planning can be adapted to most any farming situation. The monitoring side is designed to look at indicators of change. In the book and workbook monitoring is designed for grazing or rangeland situations but the *HM Quarterly* has current materials for wider application.

Twenty-five private, certified educators for HM in the U.S. and an additional ten from Australia, Canada, and Mexico are listed in the July, 1997 *HM Quarterly*. Registered Educators have met the minimum requirements for providing HM training and have made a commitment to work with the Center to ensure the quality and consistency of their work. In addition, five institutional registered educators are located at the University of North Dakota, Montana State University,

Washington State University, University of Texas/Austin, and Shasta College, Redding, California.

NRCS Worksheets

Natural Resource Conservation Service
Lewiston Field Office
Lewiston, MN 55952-0039
507-523-2171

This set of worksheets is intended to give an understanding of the condition of a farmer's resources related to pasture, cropland, woodland, farmstead, wetlands, and others concerns. The 1-4 (poor to good) ranking is similar to several others types of ranking systems. It has its assumptions about Best Management Practices. Fertility questions assume fertilizer use. An organic farmer may have difficulty completing the cropland section. For the latest information on NRCS whole farm planning guidelines, contact your local NRCS district office.

Ontario Environmental Farm Plan

Ontario Federation of Agriculture
491 Eglinton Ave. W., Suite 500
Toronto, Ontario M5N 3A2

Contact: Ms. Lynn McNiven
Ontario Soil and Crop Improvement Association
Box 1030, 52 Royal Rd (OMAFRA Bldg)
Guelph, Ontario N1H 6N1
519-767-4608

The OEFP workbook consists of 23 worksheets that assess the farmstead and fields for different aspects of an individual farmer's farm. All worksheets assess conditions on a 1-4 ranking (poor, fair, good, best). After working through worksheets, action plan pages are available so that issues ranked poor and fair can be addressed. It is set up as a cookbook that leads you to assess your own operation's environmental components. Workshops are held twice, once prior to working through the workbook and then after the ranking is done and action plans need to be developed. Various alternatives are given to solve problems, rather than a single solution. After the action plan workshop farmers go home and finalize their own action plans or if ready, they submit it for a peer review of the action plans. Ontario allows a tax break for expenses that go towards an action plan that is peer review approved and the farmer acts on.

This program is run by an association of farm organizations. Confidentiality is respected. The process, how it is set up and run, gets a lot of credit for the product, 10,000 of Ontario's 60,000 farmers have worked through the OEFP.

Organic Certification Program

Regulatory Programs Division
Texas Department of Agriculture
PO Box 12847
Austin, Texas 78711

A number of organic certification organizations are now active in the U.S. Some are active at the state level, some national, and some international. The National Organic Standards Board, authorized in the 1990 Farm Bill, will soon have uniform standards for the U.S. but probably will allow individual organizations to continue doing the actual certification process. The worksheets submitted for most certification organizations involve a form of whole farm planning. These worksheets generally include an overall description of the farm, strengths, weaknesses, goals, maps, a crop rotation diagram, a soil improvement plan, as well as a record-keeping system for purchased products used as fertility amendments and for pest control. An audit trail is maintained for all farm products.

The certification report used by the Texas Dept. of Agriculture is included here as an example, because in addition to the farm description, a Certification Rating Report is used, which provides the farm inspector with a method of evaluating an organic cropping system through an objective, numerical format. It is designed to enable the inspector to get a feel for a grower's overall production practices in a quick, easy-to-use approach. It becomes a primary method of rendering an opinion as to a grower's certifiability. It indicates areas in which an applicant is below standard, either because of inadequate documentation or a poor organic farm plan and crop management system. Evaluations are based on 13 different categories.

PLANETOR 2.0

Center for Farm Financial Management
Department of Agriculture and Applied Science
University of Minnesota
800-234-1111

PLANETOR 2.0 is a comprehensive, whole farm, environmental and economic, planning tool. It combines site-specific environmental models with individual farm economic planning data to evaluate the impacts of reducing or changing pesticide use, nitrogen applications, phosphorous applications, manure applications, tillage systems, and crop rotations. It is intended to be used to evaluate individual farm operations. It helps you look at long-range goals and strategies for the operation and compares the different environmental and economic impacts in an average year on the farm.

Ranching for Profit

7719 Rio Grande Boulevard NW
Albuquerque, MN 87107
<http://www.ranchmanagement.com>
505-898-7417

Contact: Stan Parsons

This material can be learned by either attending an 8-day RFP school or purchasing a self-study course consisting of a workbook organized into 10 lesson plans. Principles of management, economics, reproduction, nutrition, and cell grazing are covered, as well as units of application for each of the principles. In addition to the RFP school or self-study, there is an RFP Link where graduates of RFP get together for regional meetings/refreshers. Further study is available through a Graduate School program. Finally, an Executive Link program is run where long-term strategic-level decisions are made. People taking the course receive occasional newsletters.

The RFP mission statement is "Our mission is to help ranchers and farmers develop economically and ecologically sustainable businesses, and to provide effective, comprehensive, continuing education in agriculture."

Western Integrated Ranch/Farm Education (WIRE)

Department of Agricultural Economics
University of Wyoming
P.O. Box 3354
Laramie, Wyoming 82071-3354
<http://www.uwyo.edu/ag/agecon/wirepage.htm>
307-766-2166

This program, developed by the Western Regional WIRE-SARE Coordinating Committee, consists of a workbook supplemented by WIRE courses offered in the western region by the Cooperative Extension Service. The objective of the workbook is not to document every detail of the farm operation but rather to get a general picture of the operation on paper. If additional detail is required, other record-keeping systems need to be used. One purpose of the workbook is to identify the operation's bottlenecks and limiting resources. Using that information, management changes can be made to move the operation forward.

A systematic planning process is encouraged: 1) establish strategic goals, 2) inventory resources, 3) explore possible enterprises, 4) develop enterprise plans, 5) look at the flow of resources, 6) implement plans, 7) monitor and adjust, and 8) replan. This provides a framework for outlining, organizing, and managing the farm business throughout a single year. Several worksheets are included in the workbook to aid in farm description and evaluation.

The Whole Farm Planner. Published by the Minnesota Project, a center for rural community development and public policy. Contact John Lamb or Jill MacKenzie 612-645-6159

This newsletter is intended to help farmers, service providers, researchers, and policy makers become more familiar with, and involved in, comprehensive farm planning. The first issue was published in February, 1996, and they anticipate publishing bi-monthly.

Their view is that comprehensive farm planning is a long-term tool, being developed in various styles, to help farmers focus on the management of their land and on protecting water and other natural resources from degradation. Such plans generally include an inventory of farm resources; goals for profitability, pollution prevention, and ecosystem enhancement; an analysis of management options; and a strategy for putting the plan into action and monitoring its effects. In each issue of *The Whole Farm Planner*, they plan to discuss these specific components of comprehensive farm plans by featuring individual farmers' real planning experiences. This organization also has published a booklet that describes the elements of whole farm planning called *Successful Whole Farm Planning: Essential Elements Recommended by the Great Lakes Basin Farm Planning Network* (Kemp 1996).

Wisconsin Soil Health Scorecard

Wisconsin Soil Health Program
Department of Soil Science
University of Wisconsin-Madison

The Wisconsin Soil Health Scorecard, developed from structured interviews with 28 farmers from conventional and low-input, cash grain and dairy farms typical of southeast Wisconsin, assesses a soil's health as a function of identified properties of soil, plant, animal and water. The scorecard consists of 43 questions and is a field tool to monitor and improve soil health based on field experience and a working knowledge of a soil.

The scoring system gives an overall number, but it also allows for a comparison of the soil score to the single and aggregated scores of the plant, animal, and water systems that are supported by the soil. The comparisons can give insights about the soil's overall improvement opportunities.

The scorecard is best completed near or just following harvest. Periodic and seasonally expressed properties (e.g., soil smell, seed germination, infiltration) should be recorded during the growing season to increase its effectiveness. This scorecard is developed for soils in Wisconsin with silt over glacial till or outwash. Applying this scorecard to another location should be done with caution.

Table 1: Summary of Component Use for Different Planning Packages

Package	Software	Work-book	Text	Account-ing	Financial Analysis	Environ Assessed	Social Impact	Forward Planning	Whole Farm	Needs Training	Farmer Friendly
Balanced Farming and Family Living (BFFL)			A	B	B	B	B	B	A	A	A
Crop Rotations Options Program (CROP)	A				A	A			A	B	B
Farm-A-Syst		A				A		A	B	A	A
Holistic Management (HM)	A	A	A	A	A	A	A	A	A	A	B
NRCS Worksheets		A				A		B	B		B
Ontario Environmental Farm Plan (OEFPP)		A	B			A		A	A	A	A
Organic Certification		A				A		B	A		A
PLANETOR	A				A	A	B	A	A	A	B
Ranching for Profit (RFP)		A	A		A	B	B	A	B	A	A
Western Integrated Ranch/ Farm Education (WIRE)		A	A		A	A	A	A	A	A	A
Wisconsin Soil Health Scorecard		A				A		B	B		A

A=Well developed B=Evident, but could be improved Blank=not evident
 All programs are current except for Balanced Farming, which was discontinued in 1991.

Appendix B: Decision making software These programs are not all agricultural related, but they can be used as decision-aid tools.

Adaption Strategy Evaluator 2.0
 US Environmental Protection Agency
 Climate Change Division
 Adaption Branch
 401 M Street SW
 Washington, D.C. 20460

Developed by Decision Focus Incorporated, Anne Smith 202-296-4437
 For Environmental Protection Agency, Susan Herrod 202-260-6022

ASE was developed by the EPA for planners to evaluate adaption strategies for coastal zones, water resources, and agriculture. A multi-attribute approach is used in ASE to help planners recognize the wide range of decision criteria and to prioritize objectives while evaluating strategies. Unlike single-attribute approaches such as cost-benefit analysis, the multi-attribute approach does not automatically provide an "optimal" solution in most cases. Rather, the analyst will have to make a judgement of the relative importance of different attributes and draw a conclusion by looking at the "whole picture".

DecideRight

Avantos Performance Systems, Inc.
5900 Hollis St, Suite A
Emmeryville, CA 94608
800-282-6867

This decision making software is applicable to any business. It provides a framework for establishing criteria and their importance. It includes six steps: 1) state the decision to be made, 2) list the options to consider, 3) criteria for rating the options list, 4) weight criteria by importance, 5) rate options for each of the criteria, and 6) generate report to give the results of the evaluation.

Appendix C: Agricultural accounting, management, and mapping software

Software included in this section differs from that listed in Appendix A in several ways. First, these programs tend to deal with only one or two aspects of farm planning, for example, accounting, rather than attempting to be comprehensive planning tools. Secondly, none of these has an environmental assessment component, though some have field-by-field record-keeping systems for purchased inputs, including pesticides. However, tools like these may fill gaps left by the "overview" type tools listed in Appendix A. Below is a listing of the vast array of accounting and software management software available. We attempted to be as comprehensive as possible, but inevitably software may have been overlooked or released since the publication of this report. Types of products and services they offer include:

- Financial management software
- Crop management software
- Record keeping, by field
- Commodity management software
- Livestock management software
- Mapping
- Computer operations assistance
- Other services

Within the listings, you will note that some companies are identified with an

"AACC" which signifies membership with the Association of Agricultural Computing Companies . The AACC is comprised of 20 plus companies and individuals interested in the application of computer technology for agriculture. Included in the group are agricultural software and hardware manufacturers, resellers, universities, financial institutions, government organizations, publishers, and other agricultural suppliers. The AACC has a web page giving the most current information which can be accessed at: <http://asae.org/aacc/>. It can also be reached via e-mail at aacc@asae.org and via telephone at 616-429-0300

Most comments made are those stated by the company sending the information.

AgData - AACC
891 Hazel St.
Gridley, CA 95948
800-383-4328

The AgData accounting series is for tracking daily farming business incomes and expenses. The recommended startup system consists of General Ledger, Accounts Payable, Cost Accounting 2, Payroll, and Payroll Check Writing.

Agri-Logic, Inc.
RR 17, Box 198B
Brazil, IN 47834
800-444-8214

They have four software packages:

Instant Survey for Windows - a state-of-the-art mapping program
Instant Crops - a crop history program with analysis
Weed Weapon - weed-control software
Instant Books - a very forgiving accounting package

Agro Systems - AACC
RR 2 Box 88A
Brighton, IL 62012
800-282-9678

Agro Plus is the accounting package. It lists seven modules that are sold separately. They are the General Ledger, Financial Statement, Cost Accounting, Payroll, Financial Forecasting, Financial Trends and Power Graph modules.

Visual Crops for Windows 3.1 is a crop management system that offers features designed to assist with crop and field management needs, e.g., mapping, measuring, calculating distances, and map overlays for chemicals and fertilizer. Modular design allows differing report capabilities.

Crop Growers Software, Inc

7600 Mineral Drive
Coeur d'Alene, ID 83814
800-381-6617

VisAg software is the major component of a system consisting of Agricultural Management Maps, which "drive" the software and a Crop Growers Planner, a field notebook for the day-to-day operation of the farm.

Doane Agricultural Services Company

4900 SW Griffith Drive, Suite 125
Beaverton, OR 97005
800-367-7082

They provide farm accounting packages in 15 modular designs, including equipment maintenance.

Equity Consultants, Inc.

304 S Locust St AACC
Glenwood, IA 51534
800-264-0787

Farm Equity Manager is a software package that allows the flexibility of creating credit analysis statements ranging from quick and easy to complex enterprise analysis.

This program seems to be used widely by loan institutions in the Midwest. The financial analysis program includes all the Farm Financial Standards Ratios and an FmHA Guarantee Loan Package. Bar graph analysis is possible.

Farm Business Software AACC

1855 55th Ave
Aledo, IL 61231
800-437-7638

They have a catalogue of modules, including accounting, financial reporting and analysis, crop management, systems integration, livestock breeding and feeding management, integrated management systems, and field mapping.

Farm Management Systems AACC

1105 E Lincoln Hwy
New Lenox, IL 60451
800-992-2814

FMS provides accounting, mapping, weather, crop record, depreciation, machinery, ratios/index analysis, payroll, and dairy modules and decision aids for crops, finance, and livestock.

Financial Plus 6.1a

KMAR-105 Association
Fred DeLano, Administrator - 785-532-1513

Extension Agricultural Economics
Larry Langemeier 785-532-1516

Waters Hall, KSU
Manhattan, KS 66506

Financial Plus 6.1a is a computer-based management and accounting program designed for agriculture. The accounting system provides detailed reports for business management, financial analysis, and tax management. The system has double entry on cash and allows for up to nine checking-savings accounts.

Some farmers within the Kansas Farm Management Association (KMAR) have this program and enter their records directly. For those still using KMAR farm record books, their monthly records are transferred into the system by KFMA field staff.

FINPACK

Center for Farm Financial Management
Department of Agriculture and Applied Science

University of Minnesota
800-234-1111

FINPACK is a comprehensive financial planning and analysis system designed to help farmers and ranchers understand their financial situation and make informed decisions. It is not a record-keeping system. Instead, FINPACK provides tools to effectively use your farm records to make business analysis, long-range planning, and cash-flow planning as complete, easy, and meaningful as possible. FINPACK has three components: FINLRB (long-range planning), FINFLO (cash-flow planning), and FINAN (financial analysis).

Harvest Computer Company

PO Box 738 AACC
Alexandria, IN 46001
800-284-8483

Harvest has modules similar to those offered by the Farm Management System along with hog and beef modules.

Heritage Computer Solutions

RR 1 Box 213 AACC
Annville, PA 17003
717-867-8366

They specialize in software for the commercial egg industry, from the pullet to the egg.

Intuit (Quicken)

PO Box 3014
Menlo Park, CA 94026
800-624-8742

Quicken provides a flexible, easy-to-use method of keeping track of finances. It has six account types with features tailored to different tracking needs: bank, cash, credit card, asset, liability, and investment. Transactions are categorized according to the names you give in order to track income and spending. Registers are used to enter transactions into the various accounts. Bank and credit card statements can be reconciled. Cash flow, balance sheet, transaction, tax, and other reports are possible. Graphs also are possible.

Iowa Farm Business Accounting, Inc

PO Box 1809
Ames, IA 50010
515-233-5802

They provide crop management and accounting software.

K-Farm 4.1

Extension Agricultural Economics
Waters Hall
Kansas State University
Manhattan, KS 66506
785-532-5823

This is a Kansas financial analysis and resource management program for computerizing financial planning in agriculture. It uses Farm Management Guidelines as a database to develop whole farm plans. It was last updated in 1989.

PFB Farm Management Services

PO Box 8736
Camp Hill, PA 17001
717-731-3517

They provide Field Manager, a crop/chemical software program that records crop and chemical information.

Red Wing Business Systems AACC

610 Main St
Red Wing, MN 55066
800-732-9464

For account management they have a modular system with the General Ledger as the center. Production management covers crops and livestock, including cow/calf and swine.

Specialized Data Systems, Inc

201 S Stoughton Rd
Madison, WI 53714
608-241-5050

ULTRA FARM is a cash accounting system with optional credit (accrual) capabilities.
Farm Sense is an entry level accounting software.
Farm Biz is for cash crop and livestock.

Sunshine Unlimited, Inc AACC
PO Box 471
Lindsborg, KS 67456
785-227-3880

This company has a lot of small, focused programs directed to specific issues in agriculture, business, and other areas.

Appendix D: Nutrient and Soil Organic Matter Management

A number of tools have been developed that focus on one aspect of whole farm planning: nutrient management. Listed below are a few that are currently available and/or in the later stages of development. Most of these were presented at the software demonstration displays at the 1995 and 1996 Agronomy Society meetings. These are listed by location, because these soils-based programs are in some cases less transferable across bioregions than some of the whole farm tools listed in earlier appendices.

Australia - Soil Organic Carbon Reserves and Turnover in Agro-Eco Systems (SOCRATES)

Cooperative Research Center for Soil and Land Management
Soil & Water Environs, Waite Rd
Urrbrae, Adelaide,
PMB2 Glen Osmond, South Australia 5064
(08)8303-8670

Although research computer models exist to predict the fate of organic matter in the soil, this is claimed the first software to be developed for use by land managers, as well as by researchers, extension workers, and consultants, and as a teaching tool. Input data include various soil parameters, including current organic matter levels; climatic data; the crop rotation; residue management; and fertilizer inputs. The program will predict the long-term changes in organic matter level, as well as future yields.

Delaware -- Phosphorus Index

Tom Sims and Elizabeth MacKinzie (Univ of Delaware)
301-831-2532

This index is used to assess the potential for "edge-of-field" P losses from soils. It is a field-scale assessment tool designed to be a farm-wide planning tool that can identify areas most prone to P loss.

Delaware -- MANU-CAL

Tom Sims (Univ of Delaware)
Richard Johnson (USDA-ARS)
301-831-2532

The program was designed to quickly compute the amount of manure required for a crop based on soil test levels, intended fertilization practices, and realistic yield goals.

Indiana -- AMANURE Version 2.0

Alan Sutton (Dept of Animal Sciences) 317-494-4806
Don Jones (Dept of Agricultural and Biological Engineering)
Bran Joern (Dept of Agronomy)

AMANURE is intended to assist livestock producers in managing the manure produced by their operation as a plant nutrient resource. It estimates the nutrient value of manure and then recommends a manure application rate that matches nutrient requirements of the crop to be grown. The target audience for the program includes crop and livestock producers and cooperative extension educators.

Indiana -- MBUDGET version 1.0: Manure Management Planning for Farm Animal Production

Don Jones (Dept of Agricultural and Biological Engineering) 317-494-1162
Alan Sutton (Dept of Animal Sciences)
Brad Joern (Dept of Agronomy)
Don Huber (Dept of Botany and Plant Pathology)

This program is designed to help producers develop manure management plans for Indiana livestock operations. Like a budget, it treats manure storage(s) as a bank account into which manure deposits are made by the animal and from which manure withdrawals are made for application to crop fields. The software is targeted primarily to consultants, cooperative extension, and other government personnel working with producers.

Maryland -- FERTREC2.1

Steffi Li, Allen Bandel, Paul Shipley (University of Maryland)
301-405-1306

This program provides a fertilizer recommendation based on farmer-anticipated cropping practices and the use of manure, sludges, and legumes.

Michigan -- Dairy Forage System Model (DAFOSYM)

C. Alan Rotz, Uma Gupta, and cooperators
US Dairy Research Center, USDA/ARS
Michigan State University
517-353-1758

The program was first written to evaluate feed production systems and later expanded to include manure handling and tillage systems. Users can learn how changes in manure handling technology impact other components of the farm and the overall performance and economics of the farm. Although the original model was primarily for research, the current version provides an excellent teaching aid for use in classrooms and extension workshops.

Michigan State University Nutrient Management (MSUNM)

Bruce MacKellar, Le Jacobs, and Sven Bohm (Dept of Crop and Soil Sciences)
Michigan State University distribution - 517-355-0271

The MSUNM program is designed to assist crop and livestock producers in taking a total nutrient management approach. It is an entry-level record-keeping program for managing fertilizers and/or manure as nutrient sources for crop production. It is designed for crop and livestock producers. Agribusiness and extension also would benefit from it.

Minnesota -- Nutrient Management Yardsticks

Emily Green, Watershed Program Coordinator
Institute for Agriculture and Trade Policy (IATP)
1313 5th St SE, Suite 303
Minneapolis, MN 55414
612-379-5980

The Center for Agriculture and Environment (CLM), based in Utrecht, the Netherlands, had developed a series of new farm management tool called "yardsticks," designed to help farmers reduce the negative impacts of pesticides and fertilizers, especially for drinking water supplies.

IATP is now in the process of developing the process for North American use with a number of small pilot projects. IATP's draft version Nutrient Management Yardstick is the first in a series of on-farm pollution prevention tools that is now in circulation. Using this yardstick over the years to monitor should lead farmers towards better choices for nutrient use.

Farmers keep track of nutrient balances on the farm (both artificial and manure). Livestock brought onto or taken off the farm; crops and produce purchased or removed from the farm; fertilizer or manure movements; and nitrogen fixation, deposition, or movement through water is recorded to calculate balances. These numbers added up at the end of each farming year give a baseline reference from which farmers can continue tracking how their current practices are affecting the environment. The objective is to reduce the negative environmental impact.

Minnesota -- Manure Application Planner (MAP), Version 3.0

Michael Schmitt (Department of Soil, Water, and Climate) 612-625-9734
Richard Levins and Wynn Richardson (Department of Applied Economics)

MAP is used for developing environmentally sound and economically viable manure application plans. It helps users calculate a plan that does not overapply nutrients and that is cost effective. The primary objective of the program is to educate producers on how they can best take advantage of manure as a nutrient resource. It is aimed directly at agricultural producers or through professionals working with them.

New York -- Nutrient Management Planning System

Stu Klausner (Dept of Soils, Crops, and Atmospheric Sciences) 607-255-5459
Tom Tylutki, Kan Fox, Mike Barry (Dept of Animal Science, Cornell)

The CNMPS software is the first step in development of tools to integrate nutrient management with economic, environment, and landscape needs. It consists of four parts: Mass Nutrient Balance, Crop Rotation, Crop Nutrient Management Planning, and Animal Nutrient Management Planning. It analyzes the current nutrient status of a farm and integrates the soil and cropping information to develop a crop nutrient management plan. The software is designed to be used by farm advisors, planning teams, and computer-oriented producers.

Pennsylvania State Nutrient Management Program (NMP)

Douglas Beegle and Peter Bohn (Dept of Agronomy)
814-865-6541

This software allows users to estimate the quantity of available nutrients in the manure collected on the farm, prioritizes fields for manure application, allocates manure based on available nutrients in manure matched with nutrient requirements of crops, allows limits, calculates

nutrient amount (requirements or excess) for fields after recommended applications, compares nutrient buildup, summarizes net fertilizer requirements after applications of manure, and allows reallocation to fields still having nutrient needs. The intended audience includes planners, consultants, service personnel, and farmers.

Vermont Manure Nutrient Manager

and

Dairy Manure Production Estimator

Bill Jokela, John Rankin, and Sue Hawkins

Plant and Soil Science Dept

802-656-2630

The VMNM is designed to help develop nutrient management plans by recommending manure application rates and additional fertilizer needs. The DMPE is a separate spreadsheet that calculates an estimate of annual manure production available to spreading based on several factors. These results can go into the VMNM program. They recommend it for farmers and other agricultural professionals.

Wisconsin Interactive Soils Program for Economic Recommendations (WISPer Ver. 2)

Scott Bullington and Sherry Combs (Soil Science Department, Univ of Wisconsin, Madison)

Wisplan Computing Service, Madison, WI

608-262-4552

WISPer is designed to identify profitable and environmentally acceptable strategies for using purchased nutrients and nutrients produced on-farm for crop production. The program allows the user to develop a whole farm manure allocation plan based on criteria that maximize optimum on-farm nutrient use, restrict application to environmentally acceptable sites, and prioritize fields based on crop nutrient needs. Because of use of Wisconsin specific recommendations, out-of-state use is limited. Another product out of Wisconsin combines manure and nutrient management budgets with crop records, dairy herd management, and financial planning (see CROPS listed in Appendix A.)

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