DEPARTMENT OF HORTICULTURE

Whole-Farm Planning for Economic and Environmental Sustainability

Rhonda R. Janke
Extension Specialist
Department of Horticulture

What is Whole-Farm Planning?

The phrase “whole-farm planning” from a sustainable agriculture perspective has gained national attention in recent years, and has come into widespread use. Other, related terms are comprehensive farm planning, “holistic management™,” and integrated farm/ranch management.

The phrase came into use to distinguish this method from others, and add valuable approaches to planning that might focus on one part of the farm such as enterprise analysis, nutrient management, or estate planning. The goal of whole-farm planning is simply to find a way to tie all of the various parts of a plan (economic, environmental, & social) together into an integrated whole.

Link to Sustainable Agriculture

Sustainable agriculture can be defined as one that, over the long term:

- enhances environmental quality and the resource base on which agriculture depends;
- provides for basic human food and fiber needs;
- is economically viable;
- enhances the quality of life for farmers and society as a whole.[1]

Interviews with farmers in Kansas who consider themselves practitioners of sustainable agriculture found their farm goals embraced many if not all of the parts of the definition of sustainable agriculture. They were concerned with the bottom line, but also with creating habitat for wildlife on their farms, relationships with their families, and making a contribution to the community where they live. Some of these farm goals create trade-offs, where decisions to enhance one aspect of the farm may detract from another part. A farm plan helps integrate these goals into a comprehensive whole, creates specific action steps and a time-line for reaching each sub-goal, and benchmarks for monitoring when a goal has been reached. Adjustments and re-planning along the way are a part of whole-farm planning.

Whole-farm planning offers the potential for increased farm profitability and improved environmental stewardship, resulting in increased environmental quality, both on the farm and downstream. However, whole-farm planning is multifaceted, and requires cooperation and coordination among agencies who may be able to provide cost-share dollars, and respect for farmer's planning abilities. Benefits to farmers must be realized in the short term as well as in the long term, and current barriers to whole-farm planning must be addressed. (See Box 1)

How Others Define Whole-Farm Planning

In the field of agricultural economics, whole-farm planning means taking the total of a farm's enterprise budget, and joining them into one plan or budget. Thus, all fixed and variable costs are allocated to an enterprise budget, and the composite of the enterprise budgets comprise the financial outlook for the farm as a whole. Economic whole-farm planning also can include financial goal setting. Economic sustainability means not just generating a positive cash flow picture, but doing so without draining a farm’s equity or net worth and by taking into account depreciation and replacement of farm assets such as buildings and livestock breeding stock.

At the turn of the century, the term “farm management” was the study of looking at the biological aspects of the farm, combined with the sociological and management dimensions. Farm management was multi-disciplinary and involved the entire range of factors in running a farm. By the 1920s the term came to mean primarily the economics of operating a farm. By the late 1950s farm management in the United States became a subdiscipline of production economics. By the mid-1970s, the term "farming systems research" evolved to describe the multi-disciplinary

[1]American Society of Agronomy 1989

Box 1

Reasons to Do a Whole-Farm Plan

- A road-map for the future
- Plan for future profitability
- Prepare for expansion, retirement, change
- Consider environmental quality, personal goals, as well as "the bottom line"
- Provides a reference document
- Helps one get to where one wants to go

Barriers to Whole-Farm Planning

- Many don't see the need for a written plan
- Time consuming, difficult
- Fear of not meeting goals, uncertainty about the future, unexpected results
- Unclear how to write a plan
- Some feel more productive "doing," and don't take time to reflect and write down plans
- May stir up old family disagreements
- In Kansas, over half of the farmland is rented. Some farmers may have as many as 30 landlords, making collaborative planning difficult if not impossible.
- Farms are dynamic entities, and situations can change quickly
- Fear of greater control by bankers or the government, if plans are written down
- General resistance to change
- A plan is only as good as the information going into it, and some lack the information required.
- How does one develop a plan for farms in multiple counties? Multiple states? Does one use a physical boundary, economic entity, personal or family relationships to define a farm?
- Fear of regulation, now or in the future, can dampen enthusiasm for putting plans in writing, especially an environmental assessment and remediation plan.

approach used by teams of agronomists, economists, and sociologists working with farmers to solve production problems.

Within the field of natural-resource management, whole-farm planning is sometimes used to describe resource assessment on a farm, including the condition of the soil, water, filter strips, riparian buffer zones, and wildlife habitat. The Natural Resource Conservation Service defines resource management systems as "a combination of conservation practices and management identified by land or water uses that, when installed, will prevent degradation and permit sustained use." This process generally begins with a Field Inventory Sheet that notes any resource concerns in five different areas: soil, water, air, plants, and animals.

Limitations of the use of the term within a given discipline are that whole-farm planning needs to be more than resource assessment, or economic analysis, but needs to include both, as well as goal setting. Several comprehensive definitions of whole farm planning, and suggested elements have been noted in others' writings recently. (See Box #2)

A Blueprint (Architecture Analogy)

A useful analogy might be to think of the planning that is required to build a common structure, such as a house. Design is a critical feature of home construction. Architects are trained to consider many aspects of importance before designing a house or other building. Engineering expertise is used to design structures

Box 2

Elements of a Whole-Farm Plan

"Successful Whole-Farm Planning" (Kemp et. al 1996)[1]

1. Farm family goals,
2. Economic viability of the farm,
3. Water quality
4. Soil conservation,
5. Nutrient management,
6. Water management,
7. Pest management,
8. Soil quality,
9. Crop rotations, and
10. Tillage.

Holistic Management Course (R. Kroos, 1997)[2]

1. Define the whole that is managed, and define reasons for change,
2. Identify the effectiveness of the ecosystem processes, and dependence on these ecosystem processes,
3. Define a three part goal for the future (people, finances, and land),
4. Brainstorm and select tools or actions, and test the ecological, financial and social soundness of the actions, and
5. Plan, monitor, control, re-plan.

Evaluation Tools for Whole-Farm Planning (Mulla et al. 1997)[3]

1. Farm family goals,
2. An inventory and assessment of farm resources,
3. An action plan, and
4. Monitoring of progress towards the goals.

Western Integrated Farm/Ranch Education (Hewlett 1995)[4]

1. Strategic planning (establish goals, inventory resources),
2. Tactical planning (explore possible enterprises,)
3. Develop enterprise plans, and develop the flow of resources, and
4. Operational planning (implement plans, monitor and adjust, and re-plan).

Comprehensive Farm Planning (Whole-Farm Planner 1996)[5]

1. Inventory farm resources, including soil tests and maps, cropping plan, economic data, and farm site information,
2. Develop goals for profitability, pollution prevention, production and long-term ecosystem enhancement,
3. Analysis of management options, identifying problems and opportunities in the context of regulatory constraints, and
4. A strategy for putting the plan into action, as well as to monitor and evaluate how the plan is working.

within the house, such as the plumbing, heating, cooling, and electrical systems. Landscape architects design features around the house, such as tree plantings, drainage, and areas for recreation and beauty. In agriculture, there exists some expertise in the design of cropping systems, livestock breeding and feeding systems, tillage systems, and other components, but we do not have experts in a field called "whole farm science." Advocates of whole farm planning feel that there is a need for a holistic, multi-disciplinary, integrated approach. The farm operator might then become the equivalent of the "architect" in the design of each individual farm. Just as homes are designed for the size and needs of the family who will occupy it, there is no one recipe for "a farm." Instead each farm needs to be designed to fit the needs, goals, and resources available.

A Business Plan

In many diverse fields, a business plan is required to obtain loans or other investments. These business plans include a statement of business goals and objectives, a mission statement, market analysis and marketing strategy, as well as various financial projections including a five-year income statement, cash-flow projections, and break-even analysis. In addition, these plans include a description of the management team, employee roster or profile, product description, and in some cases a plan for research and development. Farms also need a business plan. Farming is different from many businesses because of the close connection between biological processes and the economic success of the farm. Also, unlike most businesses whose assets may include only buildings, trucks, or other mechanical components, a farm's assets include the quality of the soil, the water, and other natural resources. Thus, the business plan includes a resource management plan that is also a part of the whole farm plan.

As capital requirements become larger, lenders will be more likely to require that farmers have business plans, cash flow projections and updated balance sheets. A marketing plan will also be useful. As agricultural credit in the future becomes more business oriented, and environmental regulations become more site-specific, a whole farm plan will be a useful document.

Whole-Farm Planning as a Process, not a Product

Some might envision a whole-farm plan as a document, such as a notebook, map, or computer generated spreadsheet. Whole-farm planning is really a dynamic, process. The business plan and the building architect analogies do not quite fit the definition of whole farm planning in this sense, since farms are changing entities, both from year to year, and within the seasons of a year, as weather, markets, and other factors come into play. Thus, a blueprint for a farm cannot be created and implemented within a single year, and then put on the shelf. A plan is not something you point to, and say "it is done." It is a process. A written plan is an essential first step, but only one step in an ongoing process. However, like homes that are built for a specific family, needs, family size, and preferences change. New additions are built, the interior may be redecorated, a deck may be added, or other changes may be made throughout the years.

Four Phases of Whole-Farm Planning

Planning can be described as a many phase process, but a simple description would be to distinguish at least four parts, linked together in a cycle of goal setting, resource assessment, decision making, monitoring, and re-planning. (See Box 3)

A logical starting point would be to set goals [Step 1]. These need to be the aggregated goals of all the people involved in the farm. The term “management team” is used in whole farm planning to include the primary farm operator or operators, family members who are involved in the farm operation, and also family and non family members with a financial stake in the farm, such as landlords, part owners, and investors. Goals can be financial goals, such as return on investment, annual net profit, or the growth of a particular enterprise, but also might be goals related to time spent on the farm, or time spent on family, community, or self. Rural citizenship, and leadership in farm organizations and marketing groups may be a goal. Conservation goals and recreational use of the farm landscape, such as providing wildlife habitat, also fit here.

An honest appraisal of the resources available to meet established goals is also needed at the starting point of farm planning [Step 2]. Human resources include labor, but also management skills, leadership abilities, and other areas of expertise available within the farm management team, such as experience with livestock or special mechanical abilities. The farm itself, or physical features of the farm, should be described as part of resource assessment. The quantity and the quality of the soils available on the farm, access to water for crops and livestock, and livestock feeding and housing facilities should be noted. Machinery, on-farm storage for grains and other items, should be listed. Improvements on the landscape such as waterways, terraces, windbreaks, etc., can be listed as

Box 3

Four Phases of a Whole-Farm Planning Process

part of the landscape description, or noted on farm maps. Financial resources such as equity, the availability of capital, marketing opportunities, and the availability of off-farm income should be included. A relatively new term, "social capital" includes things like one's reputation in the community, extended family relationships, positive working relationships with landlords, local mechanics and other businesses should not be discounted, since these relationships can translate into savings of dollars, and access to resources that would not otherwise be available. Rural organizations offer opportunities for learning new skills, networking, and in some cases, marketing information and linkages.

The next step [Step 3] is to consider where you are at (resource assessment), where you want to be (goals), and develop a plan to get there. Many planning tools are available to help with this step, and range from software to help with recording financial data and developing cash flow projections, to NRCS assistance with soil management and water resource plans. Plans need to be realistic, and include short term as well as long term goals. A more detailed list of planning tools can be found in the publication *Indicators of Sustainability in Whole-Farm Planning: Planning Tools*, Kansas Sustainable Agriculture Series Paper, 1997, or at the website *www.oznet.ksu.edu/sustainableag.*

The fourth step [Step 4] in this process is to monitor the progress towards the goals with the appropriate assessment tools. These will range from regular "windshield" tours of fields to monitor erosion (or better yet, walking the fields), yield records, livestock production records, as well as financial records to assess progress towards those goals. Personal and quality of life goals should be revisited on a regular basis, since these important, but less tangible goals can be overlooked if there is too much emphasis on profitability.

This cycle of assessment, planning, and re-assessment can be repeated on a monthly, yearly, or less frequent basis, but the quality of the plan implementation and realization will be related to the effort that goes in to it. Rarely do things turn out exactly as planned, and frequent adjustment, fine tuning, and sometimes major overhaul or rethinking may be required to keep the plan on track, and headed towards the goal.

Tools Available, and How They Fit

An effort was made to identify planning tools currently available to farmers. That list of tools, descriptions of strengths and weaknesses, and contact information for obtaining the tools is available from local county extension offices, and also on the K-State website *www.oznet.ksu.edu/sustainableag* (Janke and Freyenberger, 1997). One tool does not fit all of the

planning needs of all four phases, though some cover more aspects of planning than others. Some tools are particularly good at helping farm families with the goal setting process, while others are best at resource assessment, and still others' strengths are in the planning or monitoring phases. Many of the component tools are in use and available now, such as soil conservation plans, farm management spreadsheets, notebooks, and enterprise budgets. ASCS/FSA maps and current and past federal tax forms are resources for planning.

There are also many new tools, not yet in widespread use, that will be helpful in the future. Courses such as "Holistic Management" and "Ranching for Profit" offer guidance in the goal setting process, testing guidelines for decision making, resource monitoring, as well as in other areas of planning. New computer software is available for tracking field records of inputs, yields, and can be linked to economic tracking spreadsheets. Mapping programs, geographical information systems, and other new approaches are now available to help with data acquisition and recording, and can link combine yield monitors to the home computer. Nutrient management plans are now required in densely populated European countries and some parts of the United States. These plans can help one avoid excess nutrient accumulation on the farm, and spread nutrients more evenly throughout the farm, promoting more efficient use of nutrients and reducing the risk of nutrient loss or runoff. In Ontario, a confidential questionnaire, the Ontario Environmental Farm Plan, is widely used to determine where best management practices are being used, where a farm may be in violation of an environmental regulation, and to develop an action plan for taking steps for remediation.

A similar program in the United States, Farm-A-Syst, provides step-by-step guidance for farmstead assessment for measures that might be taken to ensure the health and safety of the farm family. A new tool has just been developed for Kansas that integrates the Ontario and Farm-A-Syst program, and is called the "River Friendly Farm Assessment Tool."

Though many tools are available, any one farm plan will not require the use of ALL of the tools or types of tools. All farm plans need to include some similar basic elements. But in the same way that different homes fit different families, each farm management team will need to decide which planning tools are needed to come up with a satisfactory plan for that farm.

Where are we Now?

As mentioned earlier, a planning effort is only as good as the time and information that goes in to it. Some farmers may spend a lot of time planning; some in their heads, some on paper, while others may spend little to none. Some planning is done in an atmosphere of cooperation with farm partners, spouses, or offspring, while other planning may be done as individuals, with the risk of individuals within a group operation actually working at cross-purposes with one another, or assuming different goals or directions for the farm operation.

Adequate information must be available to all members of the planning team, for reliable decisions to be made. In some cases, one member may have the financial information, yet another member of the team makes purchasing decisions. On some farms, the actual figures for net return per enterprise, return on investment, and even the per unit cost of production figures are not known or calculated. A lack of basic financial data can leave many farmers in the position of making decisions for the future without the proper information. Though whole-farm budgets are best at looking at the complementarity between parts of the farm, individual enterprise budgets can show which parts of the operation are making a profit, allow calculation of the breakeven price for a commodity, and sometimes identify ways to cut input costs to enhance profit.

Published data on average costs for certain field operations, labor etc., can be helpful in making these calculations, but only through careful record keeping can farms track their true costs of production, and look for places where savings can be made, and opportunities for additional profit.

Many farms in Kansas have a soil conservation plan. However, most farms do not yet have written plans for important values such as nutrient management, wildlife enhancement, soil quality, water quality, and other natural resources.

Where do we go from Here?

To get more information on the planning tools available, and planning groups or courses offered in your area, contact your local County Extension Agent and/or NRCS office. K-State is sponsoring and collaborating on a number of whole farm planning programs around the state, and one can be tailored to your area or group. Assistance is available to help you find resources, create a planning group, or simply provide a speaker to help you find out more. Expertise is also available to help you or your group with one or more components of whole-farm planning. Feedback and consultation with

peers, or other farmers has been found to be extremely valuable in planning efforts going on in other states around the United States, and the formation of a farm planning or management club is encouraged. Confidential assistance is available for financial planning and for resolving family conflicts that may arise during the planning process. Crop and farm consultants also can be valuable resources in planning efforts. Whole-farm planning allows one to look at more than parts of a farm, but to look at the whole, with the farm (family) in control of that process.

Worksheets are included with this fact sheet for goal setting and for exploring values that are important to quality of life. These have been used in workshops, and help one begin to put goals and a resource assessment on paper. Worksheets include: 1) Farm mission statement and definition of management team, 2) Quality of life, 3) Family activities calendar, 4) Family goals, 5) Farm strengths and weaknesses, and 6) Farm goals, by category. Additional worksheets for farm financial planning and marketing are available from the Agricultural Economics Department at K-State.

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I have also appreciated the conversations and advice from my father, Allen Janke, retired farmer and K-State Farm Management fieldman.

Additional Reading and Resource Materials

Indicators of Sustainability in Whole-Farm Planning: Literature Review. Stan Freyenberger, Rhonda Janke, and David Norman. Kansas Sustainable Agriculture Series Paper. 1997.

Indicators of Sustainability in Whole-Farm Planning: Planning Tools. Rhonda Janke and Stan Freyenberger. Kansas Sustainable Agriculture Series Paper. 1997.

KSU Farm Mang. Assoc. — Marketing Guides and Farm Record Book.

Successful Whole Farm Planning: Essential Elements Recommended by the Great Lakes Basin Farm Planning Network. By Loni Kemp, The Minnesota Project, 1885 University Ave. West, Suite 315. St. Paul, MN 55104. July 1996.

The Whole Farm Planner Newsletter. Published by The Minnesota Project, 1885 University Ave. West, Suite 315. St. Paul, MN 55104. First issue published January, 1996.

Kansas Rural Papers, Published by the Kansas Rural Center, Whiting, KS. See for updates on whole farm planning programs such as the Clean Water Farm project and the River Friendly Farms program.

The River Friendly Farm Environmental Assessment Notebook. Contact K-State or The Kansas Rural Center for more information.

For an updated list of whole farm planning projects sponsored by Kansas State University, contact your County Extension Agent or see the web site *www.oznet.ksu.edu/sustainableag*

References:

1. Kemp, L. (1996) Successful Whole Farm Planning: Essential Elements Recommended by the Great Lakes Basin Farm Planning network. The Minnesota Project, St. Paul, Minnesota.

2. Kroos, R.H. (1997) Your Comprehensive Guide to the Study and Practice of Holistic Management. Crossroads & Company, Belgrade, MT.

3. Mulla, D.J., L.A. Everett and J.L. Anderson. (1997). An Evaluation of Tools for Whole Farm Planning. American Society of Agronomy Abstracts. pp. 33.

4. Western Integrated Ranch/Farm Education. (1995) by J.P. Hewlett, the Wyoming Wire Team, and the Western Regional WIRE-SARE Coordinating Committee. Dept. of Ag. Economics, Univ. of Wyoming. Laramie.

5. The Whole Farm Planner. (1996) What is Comprehensive Farm Planning? Vol 1 Number 1 pp. 6.

Worksheet 1. Farm Mission Statement and Management Team

Name of Farm or Ranch:

List of people involved in the Farm or Ranch:

Name	Relationship	Role

Mission Statement: (why you farm or ranch)

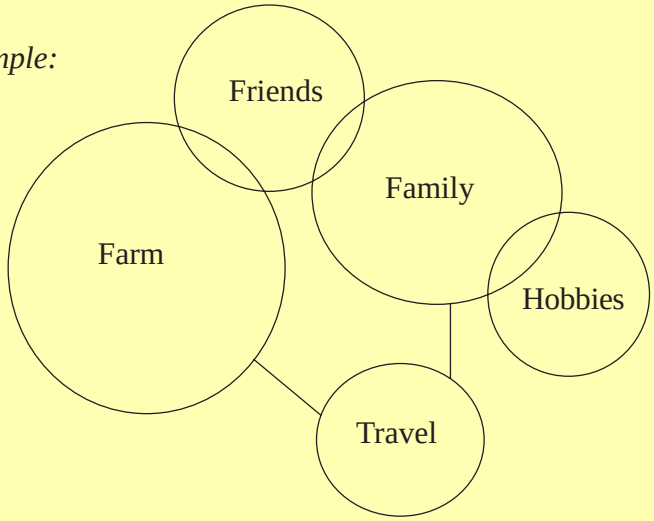
Tools that you use now for whole farm planning:

Worksheet 2. Quality of Life

Example Quality of Life

1. Think of the "core elements" that make up your quality of life.
2. Draw them as circles or shapes on the paper. Make them various sizes to correspond to relative importance.
3. Draw related elements closer to one another.
4. Use lines, other shapes, etc. to show relationships within the diagram.

Example:



Your Quality of Life Illustration

Worksheet 3. Farm Strengths and Weaknesses—Resource Assessment

	Natural Resources	Infrastructure	People	Financial
Strengths				
Weaknesses				

Worksheet 4. Family Goal Setting

Person	Role	Goal

Example Worksheet 4. Family Goal Setting

Person	Role	Goal
Joan	*Nurse*	*Work no more than 40 hours per week, no night shifts.*
	City Council	*Attend all meetings. Head up task force to increase wages for city workers.*
	Mother	*Attend daughter's home games and band concerts. Be home for dinner each evening. Teach daughter how to cook. Volunteer as chaperone for 2 school events this year.*
	Wife	*Help husband care for parents.*
	Farmer	*Help in field during planting and harvest. Help work cattle at weaning.*
Bob	*Dad*	*Take daughter to weekend basketball practice games and band practices.*
	Husband	*Cook dinner at least twice a week.*
	Farmer	*Maintain steady cash flow and reduce debt on farm this year. Take accounting class and learn to use Fin-Pak on home computer.*
	Son	*Check in on parents each evening. Bring groceries or take shopping at least once a week.*
	Carpenter	*Work at least 20 hrs per week during winter months. Make estimated $xxx income this year.*
Jane	*Student*	*Get at least a "B" average. Apply to at least 2 colleges, think about a major.*
	Daughter	*Help with planting. Drive truck during harvest. Learn to cook.*
	Band member	*Play in fall orchestra and winter pep band.*
	Basketball player	*Practice at least once a week year-round, and play "A-Team" ball this winter.*

Worksheet 5. Family Activities Calendar

ACTIVITY	PERSON	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC

Worksheet 6. Farm Goals Date:_____

	Short Term (1-3 Years)	Medium Term (3-10 Years)	Long Term (10+ Years)
Infrastructure			
Land			
Buildings			
Equipment			
Other			
Ecological/Landscape			
Cropland			
Grassland			
Woodland			
Wetlands/Ponds etc.			
Water courses			
People			
Skills			
Labor			
Communication			
Family/Quality of Life			
Financial			
Production/Enterprise			
Cash Flow			
Debt/Asset			
Marketing			

Example Worksheet 6. Farm Goals Date:_____

	Short Term (1-3 Years)	Medium Term (3-10 Years)	Long Term (10+Years)
Infrastructure:			
Land	*maintain all leased land*		*transfer land to daughter*
Buildings	*repair barn roof*	*new hay shed*	
Equipment	*replace tractor*	*purchase ridge-till equipment*	
Other	*concrete compost pad*		
Ecological/Landscape			
Cropland	*develop rotations for all land*	*retire erodible land to grass*	
Grassland	*re-seed back pasture*		
Woodland	*increase wildlife, deer*		
Wetlands/Ponds etc.	*fence ponds*		
Water courses	*add buffer strips to stream*		
People			
Skills	*attend borrower's training*	*learn Fin-pak, use at home*	
Labor	*hire one person during summer*	*begin retirement, cut back hours*	
Communication	*have monthly meetings with family*		
Family/Quality of Life	*see family goals sheet*		
Financial			
Production/Enterprise	*diversify crops*		
Cash Flow	*monthly cash flow of xx $*		
Debt/Asset	*reduce debt by xx %*		
Marketing	*direct market beef locally*		

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