



An evaluation and documentation of Holistic Resource Management practices on Northern Rocky Mountain ranches
by Charles E Orchard

A thesis submitted in partial fulfillment of the requirements for the degree of Master of Science in Soils
Montana State University
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Abstract:
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MANAGEMENT PRACTICES ON NORTHERN
ROCKY MOUNTAIN RANCHES

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A thesis submitted in partial fulfillment
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of

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CHAPTER 1

INTRODUCTION

Despite many successes and high productivity throughout this century, the American agricultural industry has developed severe ecological, social and economic problems. Soil and water are the worlds most vital components for food and fiber production. Protection of these natural resources are paramount for human existence. In the US, soil erosion by wind and water and the associated loss of productivity, continue to be our most serious agricultural and environmental problems (Larsen, et. al., 1990). Erosion causes the world's topsoil to be lost at an estimated 0.7% each year (Brown & Wolf, 1984). Less than 12% of the earth's total land surface is currently cultivated, and little additional arable land is available (Smith and Paul, 1990). According to Napier (1986), in spite of extensive and expensive soil conservation measures for over fifty years, the US may still be losing as much as six billion tons of topsoil a year through erosion. In fact, the Soil Conservation Service

(SCS) estimates that in many parts of the US, soil is being lost faster today than during the dust bowl years.

The Environmental Protection Agency has identified agricultural practices to be the largest non-point source of surface water pollution (NRC, 1989). Bauder et al. (1991) found that widely used dryland crop-fallow systems are associated with increased nitrates in ground water. Pesticides have been detected in ground water for several years in agricultural regions. We are now learning that the spread of agricultural chemicals is greater than previously thought. According to the US Geological Survey, agricultural chemicals, including atrazine and alachlor, attach to water molecules that evaporate from farm fields then return to earth in raindrops sometimes hundreds of miles from their source (Land Stewardship Letter, 1991).

From 1945 to 1975, the largest migration in the history of mankind occurred in the United States when 20 million people left the farms and ranches of this country and looked elsewhere for a job (Bergland, 1993). In the 1940's twenty-three percent of Americans were full time farmers, in 1980 the percentage had dropped to less than three percent (Kirkendall, 1991).

There are a multitude of economic costs associated with agriculture. The costs society must bear focus on environ-

mental reclamation and government farm programs. Economic decisions made by farmers in the early 1970's raised farm debt in the nation from less than \$50 billion to over \$200 billion by the early 1980's (Kirkendall, 1991). The number of rural communities dependent on farming declined from over 2,000 to about 700 between 1950 and 1970 (Historical statistics, 1975). The small, diverse farms of rural America are mostly gone, swallowed up by the large corporate farms, expanded family farms, or lost in bankruptcy (Cochrane, 1991).

America's social attitude has shifted from an unequivocal support of agriculture to a questioning ambivalence toward, and even fear of, modern agricultural practices. Unfortunately, the vast majority of our society has become far removed from the "roots of agriculture". Few Americans know what is required in living with and from the land to produce the food our nation and world consume. Current agricultural problems reveal how far humans have removed themselves from the basic natural processes of life, the flow of solar energy, the cycling of water and nutrients, and the succession of plants and animals which use nutrients and transform and use energy (Sindelar et al., 1995).

However, Americans are familiar with the environmental and economic costs which lie in the debris of agriculture's swath of production. These anxieties have stimulated several responses. One outcome is the creation of private environmental organizations. While these organizations espouse environmental, social and economic themes, many of their concerns actively question agricultural practices as well.

The environmental, social and economic problems we face are symptoms suggesting dysfunction of the present agricultural system (Heffernan, 1986). In searching for answers, traditional research has, most commonly, relied on the Cartesian, linear method of analysis; separating problems into the smallest pieces and analyzing those pieces in detail. Ultimately, we have turned to technology for the answers, a tool that never comes cheaply. This approach has led to short term solutions and long term ecological, financial and social costs.

An analogy might help in understanding this approach. If one were to study the All-American apple pie, traditional Cartesian methodology would dictate that we analyze it part by part. We would look at the flour, the shortening, apples, cinnamon, nutmeg, lemon rind and juice, salt, vanilla and sugar separately. If we tasted these items separately, we would find: the flour was dry and not at all flavorful; the

shortening, greasy; the apples, tart but good; the cinnamon and nutmeg, strong and bitter; the lemon, tart if not sour; the salt, unpleasant; the vanilla, aromatic but distasteful; and the sugar dry and not at all as pleasant as anticipated. In short the ingredients are distasteful, but when they are combined, cooked, and interconnected, the whole pie is delicious. The idea of holism is interconnection. Albert Einstein once said "The significant problems we are facing... cannot be solved at the same level of thinking we were at when we created them." (Stewart, 1973).

(W) Holism

The concept of holism is not new. Many cultures from around the world have embodied this approach to problem solving as part of their heritage. Holism revolves around the idea that everything is connected and interdependent and that the whole is different from and greater than the sum of its individual parts (Barnhart, 1965). A change or disturbance in one area will cause a response and/or disturbance in other areas as well. The concept of holism destroys the illusion that the world is created of separate unrelated components (Senge, 1990). Holism incorporates the first law of ecology; everything is connected to everything else (Hardin,

1985). Eugene Odum implies a holistic approach is necessary in dealing with complex systems. He advises development of a holo-economics to incorporate cultural and environmental values along with a monetary economy and ecology. Until economics, ecology and ethics are merged, Odum believes we cannot be optimistic about the future of mankind (Odum, 1990).

Galen Bridge (1993), USDA/SCS suggests the SCS has a common goal to balance the short-term and long-term needs of our environment and our economy, and to do it in a manner that respects the people who manage the land. The term Bridge applies is "whole farm planning" or "total resource management" although it could be termed holism. It is a holistic, ecosystem-approach to conservation planning that incorporates air, water, plants and animals and their inter-connections into the management.

Holistic Resource Management

Allan Savory (1988) has applied the practical application of holism to a decision making and management process termed Holistic Resource Management (HRM). His HRM model integrates the economic and social components while embodying ecological principles to sustainably manage a farm, ranch, or other piece of land. The HRM model can also be

applied in situations which are not directly land based. It can be used for diagnostic and policy analysis, and in a research orientation mode as well. In order to increase knowledge of HRM, Savory established the Center for Holistic Resource Management (CHRM) as an international nonprofit corporation in 1984. Based in Albuquerque New Mexico, the Center's goal is to improve the human environment and quality of life through better resource management.

Although HRM is being applied more and more by agricultural managers, there is little replicable documentation and evaluation of the processes of change which HRM facilitates in its practitioners and their land resource base. HRM is not yet accepted within the larger community of land managers, scientists and policy makers. A lack of knowledge and confidence among land managers and academicians towards HRM may stand in the way of acceptance and application.

Purpose

The purpose of this study is to: (1) prepare, administer and analyze a survey of farm/ranch managers whom have been using Holistic Resource Management practices for two or more years; (2) describe the processes these holistic managers use to adjust their systems of land, people, and

financial management, and (3) describe the changes these managers have observed since adopting and utilizing HRM.

Research Questions

- 1) Does adoption and implementation of HRM lead to positive or negative change in happiness for these ranchers, and what kinds of change are there, if any?
- 2) Does the adoption and implementation of HRM influence the financial satisfaction for these ranchers, and if so, how?
- 3) What kind of ecological change, if any, is occurring on these ranch lands since adopting and implementing HRM?
- 4) What are the current motivation levels for these ranchers to continue implementing HRM?

Methods

The intent behind the study was to select participants whom were firmly committed to the concepts of HRM. The preliminary list of potential respondents was gathered via recommendations from HRM consultants and educators for practitioners in the Northern Rocky Mountain region of Montana, Wyoming, and Idaho. Methods suggested by Dillman (1978) were integrated into this study. A telephone conversation with these practitioners introduced the study and asked their

consent to participate. To qualify, two criteria were required: (1) respondent had attended an introductory HRM course and (2) had been implementing the method/process for two years or more. With their consent, a survey packet was mailed. The packet consisted of one questionnaire, one reply sheet, and a self addressed, stamped envelope to return the information. Approximately 5 days later, the researcher made second contact via telephone asking if they received the questionnaire, and to clarify any questions concerning the survey.

The survey instrument (see Appendix) was designed primarily following the HRM model incorporating eleven areas of emphasis:

- 1) Goals: This section asks, if the rancher has developed and is following a holistic three-part goal. It also asks about type and frequencies of planning.
- 2) Communication: This asks what communication levels exist on the ranch, frequency of planning meetings, and what levels of trust and acceptance are present.
- 3) Satisfaction: This asks about changes in satisfaction regarding happiness, and the types and duration of time off ranch personnel are experiencing. It also asks about employee production incentives.

- 4) Finances: This section delves into financial aspects of the business. What enterprises are being used, created, and removed? Have there been changes in ranch expenses, income, and profit?
- 5) Monitoring: Is it taking place, and what specific soil and vegetative changes are being observed?
- 6) Problem species (plants, rodents, insects): How much time, money, and effort is being expended compared to the past?
- 7) Wildlife: What is the opinion concerning wildlife? Are there management practices developed and used for them? What changes are being observed regarding numbers and diversity?
- 8) Livestock management practices: What changes have been implemented? What about disease and medication use? How has performance changed? What changes, if any, in stock density and animal impact are taking place?
- 9) Off farm inputs (fertilizers and pesticides): What changes have taken place regarding their use?
- 10) Motivation levels: What level of motivation is present to continue HRM? Are goals being achieved? How much HRM training has taken place? What are advantages and drawbacks of HRM?
- 11) Background information: This asks about the total ranch income and expenses, ranch size, number of people involved,

ownership, management experience and years managing holistically, etc.

Most of the questions were designed for yes/no replies. Some questions required selection from a seven point Likert scale indicating no change, or degrees of positive or negative change. There were many places for written comments as well. Completion time was estimated at 60-90 minutes.

A pre-survey was conducted using participants from the 1992 annual HRM meeting in Albuquerque. Approximately 15 people filled out the questionnaire and provided answers and comments for improvement. These results and suggestions were used to complete the final survey instrument which was mailed to the current participants in February 1993.

Survey data were received in the mail and entered into a data base. The SPSS statistical package was use to create a descriptive frequency analysis(Huck, et.al., 1974) which determined the number of respondents with similar replies. Using descriptive statistical analysis to summarize the results, the SPSS statistical package ran a frequency analysis to gain distribution data.

CHAPTER 2

INTRODUCTION TO HRM AND THE HRM MODEL

This chapter will provide a summary of Holistic Resource Management (HRM), introduce the HRM model, and describe how this process can apply to agricultural producers.

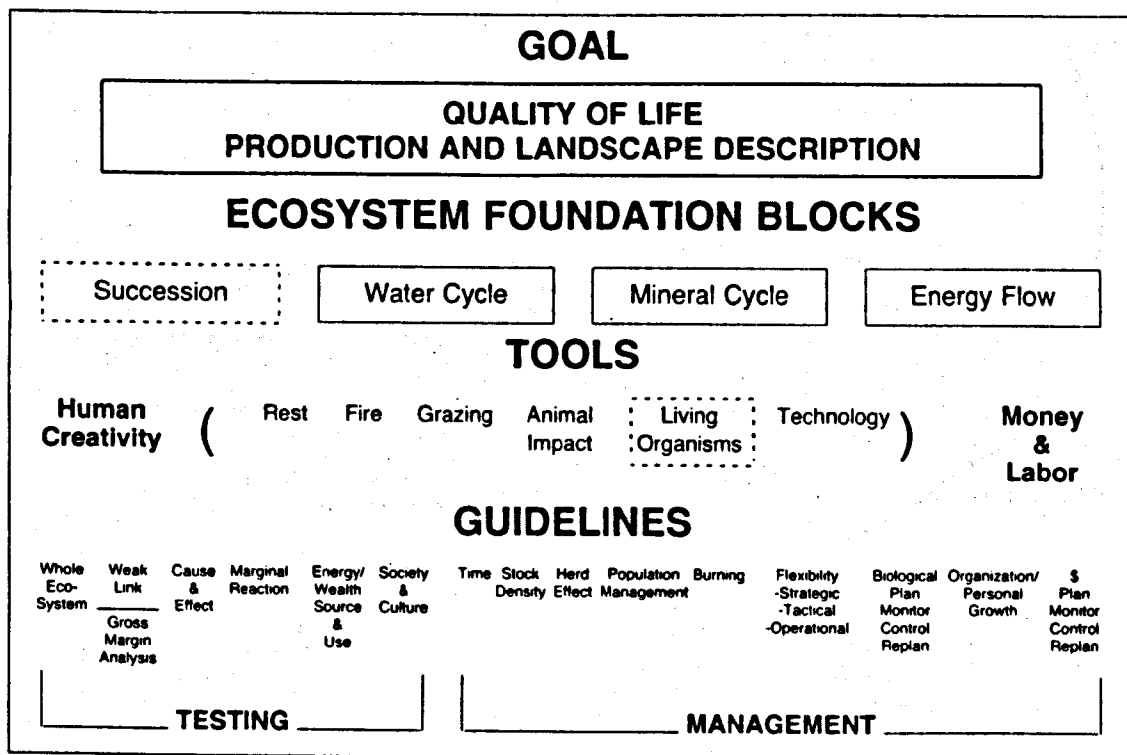
Evolution of Holistic Resource Management

The Theory of Holistic Resource Management is based on a compilation of knowledge from many people (J.C. Smuts, Andre Voisin, Native American teachings, Center For Holistic Resource Management staff, and members). It has been developed primarily by Allan Savory, a game biologist and consultant originally from Zimbabwe, South Africa. He has experienced more than 20 years of game and domestic animal management experiences and observations. Savory has proposed several ecological concepts involving the dynamics of plant and animal relationships. His conclusions indicate an interdependence between plants and animals which is not always obvious using the traditional Cartesian

scientific approach. He began to view ecosystems as functions of four fundamental processes which include: the development of living communities (succession), the cycling of mineral nutrients, and water, and the flow of solar energy.

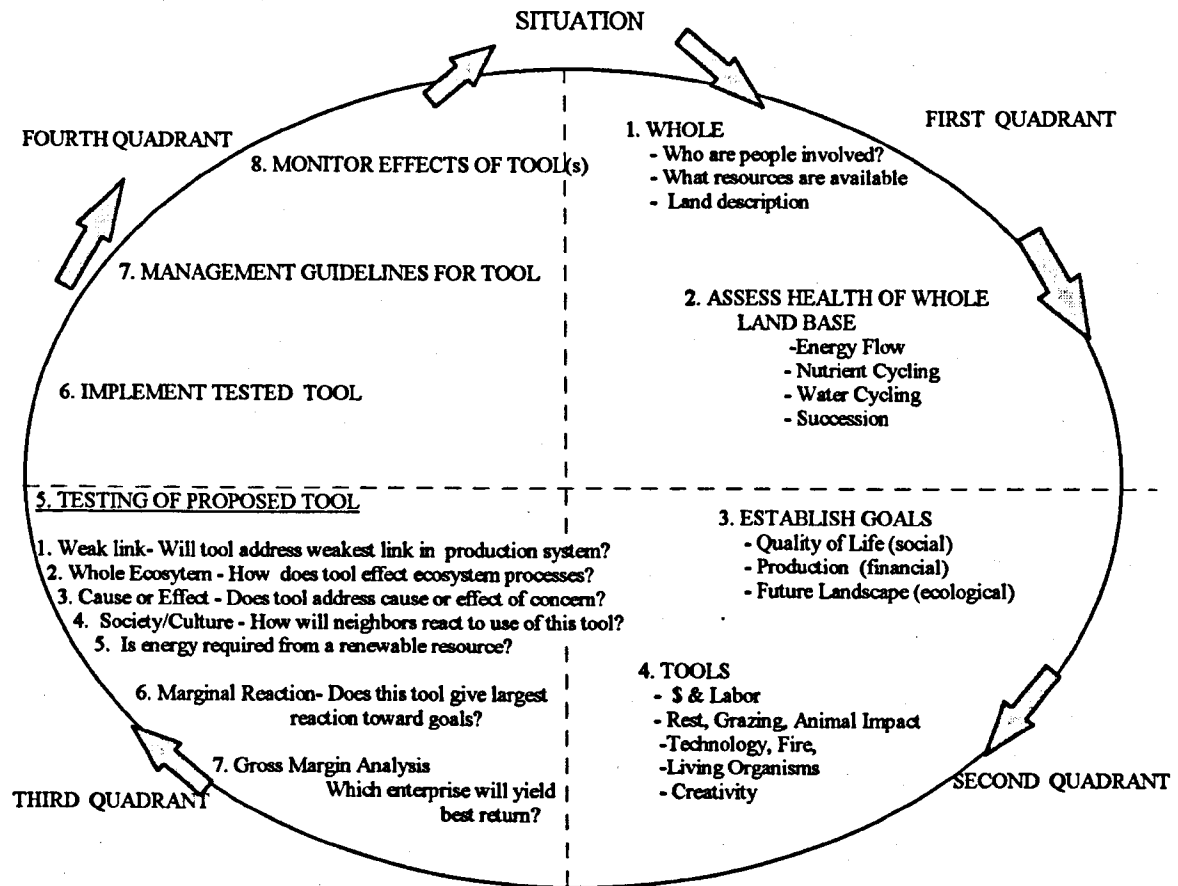
With this information as a foundation Savory began the construction of a strategic planning and decision making model, integrating the concept of (w)holism into its framework (see Fig 2.1). His model allows a resource manager to forecast the outcome of management decisions.

Fig 2.1. HRM decision model (Bingham, 1990)



To simplify the explanation of Savory's model, this paper will use the model configuration Dr. Cliff Montagne (personal communication, 1993) has constructed (fig 2.2). This arrangement is an integration of Kolb's (1986) learning style theory, combined with the concepts and contents of the HRM model Savory completed.

Fig. 2.2 Circular configuration of HRM model
(Montagne, 1993)



HRM ModelFirst Quadrant

Montagne's HRM decision model is structured in a circular manner, followed in a clockwise rotation, and is broken into four quadrants.

Whole. Quadrant one is where the situation is defined: the items of concern are articulated and particular attention is paid to the "whole under management". Ideally, the most involved people (core team) are included in this step. This group describes or identifies what resources are at their disposal (e.g., money, equipment, facilities, livestock, certain individual skills, etc.). Furthermore, some description of the lands involved would be desired.

Once the "whole" is described, it is crucial to establish the health of the land base. This would be recognized by assessing the function of the four fundamental ecological processes.

Indication of a well functioning ecosystem would be water and minerals actually cycling into the soil quickly and efficiently. Solar energy is flowing effectively throughout the system, being captured by many forms, and levels, of green plants. The successional level/community

dynamics of the plant and animal communities will display a healthy diversity.

Second Quadrant

At this point, the model is designed to guide the ranch team toward the development of a *holistic three-part goal*. During this process it is important to develop the trust and acceptance necessary for open communication. With good communication, the people in the "whole" optimize the chances of forming an effective and collaborative team.

Holistic Three-Part Goal. The *quality of life* section of the goal would imply and describe the values which are important for the team. For example a ranch family might seek to enjoy the work and life on the ranch, attain financial security, have time for a vacation, send their children to college, and eventually pass a successful ranch on to following generations. They might also want to contribute to the health and sustainability of their community.

Achievement of the goal for quality of life is dependent upon various forms of production. A family may desire to generate profit from harvesting solar energy through the use of grazing animals, and wildlife. To obtain the desired production, the *future landscape/resource base*

must be envisioned and described. The family might specify this goal by describing the ideal future condition of the four ecological processes.

Tools. In this quadrant all possible tools are considered for achievement of the goal. Creative brainstorming is encouraged. Savory includes all of the tools known and categorizes them accordingly as: technology, grazing, animal impact, fire, rest, and living organisms. Savory considers these tools as functions of money, labor, and human creativity. But before any tool can be implemented, it must be tested.

Third Quadrant

The *testing guidelines* are paramount in the decision process. These tests question what social, financial, and ecological impacts the tool under consideration might produce. Specifically, they assist in asking if the tool or plan would :

- 1) Strengthen the *weakest link* in the production system which is blocking progress towards the desired objectives.
- 2) Consider what effect this tool has on the whole ecosystem, and its processes.

3) Address the *cause* or just the *effects* of the problem.

4) Be *socially* and *culturally* acceptable for the team and within the community, or larger area.

5) Conserve non-renewable energy and create renewable solar wealth.

6) Create a large or small *marginal* reaction toward the goals for the time, money and effort required.

In addition, the *gross margin analysis* test is used to select the best combination of revenue generating enterprises which will reach the desired goals.

Fourth Quadrant

This is the quadrant where *implementation* of the tested tool takes place. A series of twelve *management guidelines* encourage effective performance of the tool or plan. Some management guidelines, such as *flexibility* and *organization/personal growth*, apply to almost any situation involving people. Others such as *stock density* and *herd effect*, relate specifically to livestock operations. All management guidelines continually re-focus on the three-part goals. Managing human and environmental aspects is emphasized in these guidelines.

Monitoring. Throughout the process one must accept the possibility of being wrong and recognize that when this happens, re-planning and adjustments must be made.

Ideally, land monitoring should be integrated into the management system. This can identify, to the land manager, small changes in the land either toward or away from the future landscape description. Savory and others devised a land monitoring method (Bingham, 1990) based on permanent monitoring points placed at key locations throughout the landscape. The premise is to measure the ecological health of the land. This method produces photographs and data for the land manager describing the processes of water and nutrient cycling, succession, and energy flow.

Back to the Start

One revolution of the model has been completed bringing the manager back to the beginning of a new situation. What new concerns are facing "our rancher"? With each revolution, time will pass, some concerns may change. The "whole" will transform through time and will be redefined periodically, some of the goals may change, and different tools will be considered and evaluated for making progress toward the goals. Tools passing the guidelines will be used, monitored, and adjusted, taking the manager to the beginning again.

Adult Education

The Center For Holistic Resource Management (CHRM) has provided educational programs for land managers through a variety of short courses. An introductory course which presents general theory and concepts is first recommended. Following courses detail ecological, social, and financial applications. Further information can be gained from the main textbook Holistic Resource Management , 1988, by Allan Savory, and from the Holistic Resource Management Workbook 1990, by Sam Bingham and Allan Savory.

CHAPTER 3

PRACTITIONER PROFILE AND FINDINGS

Practitioner Profile

Of 48 practitioners contacted, 43 (91%) returned completed questionnaires. Forty-nine percent of the ranchers were from Montana, 37% from Wyoming, and 14% from Idaho. All of the respondents were male. Their ages ranged from 17 to over 56 years. (see Table 3.1).

Table 3.1 Age distribution of respondents.

Age	Frequency
12-17 years	2%
26-35 years	23%
36-45 years	42%
46-55 years	21%
over 56 years	12%

Prior Family Ownership

Sixty percent (60%) of the operators reported their ranch had been managed by a prior generation of their family. The length of time they had been managing their ranch varied from 1- 44 years (see Table 3.2).

Table 3.2 Years respondents managed current operation.

Length of Management	Frequency
1-5 years	26%
5-12 years	25%
12-20 years	26%
20-44 years	23%

People Involved

These operations ranged from one to seven families living on the ranch. Most of them (80%) had from one to three families residing. Seventy percent (70%) of the respondents hired at least one employee on a permanent basis. Half of them employed two to six people permanently.

Ranch Enterprises

Ninety-seven percent (97%) of the participants raised cattle in addition to a number of other agricultural business ventures (see Table 3.3). Almost 60% of these ranchers (58%) considered wildlife a business enterprise on their ranch and viewed wildlife as an asset for their operation. Almost one quarter of those responding also had someone in the household employed outside the farm.

Other enterprises mentioned were row crops, timber, swine, fish, goats, guest business (e.g., guest cabins, dude ranching), power fence sales, stock trailer sales, tree and shrub nursery, and native grass seed.

Table 3.3 Most common enterprises on ranches managed holistically.

Enterprise	Frequency
Cattle	98%
Wildlife	58%
Hay	47%
Horses	28%
Sheep	26%
Off Farm	23%
Outfitting	19%

Ranch Size

Ranch sizes varied from 400 acres to more than 50,000 acres. Forty percent (40%) of the ranches ranged from 6000-25,000 acres. Thirty-seven percent (37%) of the ranches were 6000 acres or smaller and 23% were larger than 25,000 acres.

Gross Revenue and Expenses

Managers reported annual gross ranch income ranging from less than \$25,000 to more than \$500,000 (Table 3.4). Expenses varied across a wide range from less than \$25,000 to over \$1,000,000 (Table 3.5).

Table 3.4 Gross revenue generated on ranches managed holistically.

Gross Revenue	Percent of Ranches
< \$25,000	2%
\$25,000- \$100,000	12%
\$100,000-\$175,000	36%
\$175,000-\$350,000	27%
\$350,000-\$500,000	10%
> \$500,000	20%

Table 3.5 Gross expenses of ranches managed holistically.

Gross Expenses	Percent of Ranches
< \$25,000	10%
\$25,000 - \$100,000	28%
\$110,000 - \$200,000	22%
\$200,000 - \$300,000	15%
\$350,000 - \$450,000	13%
\$600,000 - \$800,000	10%
> \$1,000,000	2%

Why the Switch to HRM?

This question was not asked directly on the questionnaire, but was gathered from telephone interviews with the respondents. The basic reasons these managers chose to manage holistically were:

- 1) *They had few other options.* Some of the people indicated they were in such a financial bind that they were "willing to try anything". HRM was a "what could they lose" alternative. Facing the possibility of losing the ranch, they could at least try HRM.
- 2) *Interested in a new grazing method.* Several people indicated they had heard or read something about the grazing aspect of HRM. This generated enough interest for them to take an introductory class.

3) Offered an alternative approach to resource management. Some managers indicated they had begun to question their current management approach and were interested in alternatives. HRM offered them an option to conventional management practices.

Training and Education

Learning to manage holistically requires a certain amount of education and understanding. All of the participants have attended an introductory course (3-5 days) which acquainted them with the concepts of HRM. Eighty-eight percent (88%) of these managers have attended additional courses focusing on specific ecological, social, or financial aspects of HRM. Table 3.6 lists additional HRM courses taken by the survey group. Some respondents mentioned other educational programs such as; Bud Williams Stockmanship Schools (low stress stock handling techniques), Stan Parson's Ranching for Profit school (similar concepts of HRM, but less holistic thought, and more emphasis on finances). Another source to gain knowledge is hiring private consultants/educators well grounded in HRM. Almost 1/2 of the respondents (48%) have used a consultant since adopting HRM.

Table 3.6 Additional courses attended by HRM managers.

Course Name	Frequency Distribution
Generating Wealth	58%
Grazing Planning	51%
Land Planning	34%
Leadership Course	21%
Families in Business	16%
Goal Setting	9%

Years Managing Holistically

Ninety-seven percent (97%) of the participants had operated their ranches using a traditional management approach prior to adopting holistic management. One producer bought a ranch and began to manage holistically immediately.

Of those surveyed a small percentage (5%) had been using HRM for more than 10 years. The majority (63%) have been using HRM for five to nine years. The balance (31%) fell into the two to four year category.

Planning and Goals

Holistic Resource Management requires intensive planning and management. If used as intended, the planning procedure follows the organized structure and procedures of the HRM Model. Planning should ideally involve the following; a holistic three-part goal, land planning, grazing planning, monitoring, and financial planning.

Holistic Three Part Goal

As discussed in Chapter 2, goal formation is necessary. "Don't even think of managing resources without a goal" says Savory (Savory, 1988). He encourages a holistic three-part goal which includes the Quality of life, Production, and Future Landscape components. This approach is designed to provide an effective way to structure and define a temporary goal for the business. Strategic long range goals would also be addressed and some tactical objectives may be considered.

Land Planning

With the use of maps, the lands of the ranch are inventoried and analyzed for land use efficiency. Land planning would involve assessment of pasture sizes, configuration, and forage quality and production. Efficiency of the irrigation system would be considered. A formal land monitoring program to evaluate ecosystem health would begin as well.

Planned Grazing

The grazing planning (biological planning of Savory, 1988) is a key element of holistic management when grasslands are involved. This planning helps match nutritional requirements of the stock with growth processes of the

vegetation. It also allows managers to calculate more closely the forage reserves they have on hand. It can be used to plan for critical times involving wildlife, poisonous plants, or other ranch activities. The planning is not easy and is built with flexibility in mind, but can be an effective tool when using the tool of grazing. Further discussion on this topic can be found in Chapter 5.

Monitoring

Recently, there has been a great deal of interest in monitoring land health, especially in conjunction with rangeland and riparian issues. The Montana Grazing Lands Initiative, and Rangeland Reform 94 have contributed to this interest.

As Chapter 2 suggests, monitoring is vital for the holistic resource manager. To use HRM effectively, a manager must monitor for change. Change in the land, in the finances, and in peoples satisfaction. Without this information it is difficult to know whether the goals are being reached.

Financial Planning

Financial planning is another component of HRM. This aspect of the management is often considered the most important since we all live in a world that "uses dollars to

keep score". This planning involves creating yearly budgets and applying gross margin analysis and marginal reaction tests to ranch enterprises. The weak link test would be used to indicate where money should first be spent. These procedures are covered with more detail in Chapter 6, and in the testing and management guidelines of the HRM text book. (Savory, 1988)

Findings

Written Whole and Goals

More than 65% of the managers had some form of documentation describing the people involved, an inventory and assessment of what resources are available (e.g. land, money, equipment, buildings, facilities), and some description of the land involved with the business.

Seventy-nine percent (79%) of the managers have met with the rest of their working team (family members, owners, and/or employees) and established written goals for the future of the people and the ranch. Table 3.7 indicates the most common components of ranch goals.

Table 3.7 Components included in ranch goals.

Goal Components	Frequency of Occurrence
Quality of Life	91%
Production	88%
Future Landscape description	86%
Neighbors/community involvement	55%

Monitoring Goals

One method of monitoring the "people portion" of the business is to involve everyone in the goal review for the ranch. It appeared this process was happening to some degree. Of the people who had established written goals for the business, over one-half (56%) indicated they annually met with team members and reviewed the ranch goals.

Grazing Planning

Eighty-five percent (85%) of these managers plan an annual grazing strategy which is based on knowledge of plant growth cycles and other biological factors. Sixty-five percent (65%) of the survey group was planning and implementing management practices for the wildlife, and 83% reported increased care for riparian areas.

Land Monitoring

When asked how much formal documented land monitoring was taking place on their land, the survey group indicated 60% had a program implemented. Over half of those monitoring are using photos to indicate land changes as well.

Financial Planning

Seventy-eight percent (78%) of the respondents suggested they used an annual documented financial plan and budget on which they based their business and operational decisions.

CHAPTER 4

SOCIAL ASPECTS AND FINDINGS

HRM and Organizational Management

Farmers and ranchers seldom have training involving effective personnel management skills. Holistic Resource Management addresses this concept. The intent is for managers to become more aware of the importance of people within the operation. The "people portion" of HRM emphasizes the point that -- *without people, no work gets accomplished.*

HRM not only helps the manager recognize the value of people on the job, it also focuses on enhancing the employee/employer relationship. The intent is two-fold; make the job experience as pleasurable as possible for the employee, and optimize overall productivity while minimizing costs.

Methods are encouraged to stimulate a work environment conducive to creative thinking, planning, sharing ideas, and promoting a feeling of ownership in the business. Many.

of the principles follow the organizational theories of Edward Demming's Total Quality Management (Levine, 1995).

Education and Training

It should come as no surprise that the HRM approach encourages, if not requires, outside training and a continued pursuit of competent management skills. There are several courses taught by professional educators associated with HRM which focus on:

- Team building
- Creating dynamic board/staff partnerships
- Long range planning
- Total quality leadership
- Estate planning

Organizational Development and Personal Growth

The Center for HRM suggests and encourages readings in the fields of organizational development and personal growth. Warren Bennis (1985), John Naisbitt (1985), Thomas Peters (1982), Peter Senge (1990), and Steven Covey (1989) are a few of the recommended authors.

Trust and Acceptance

For people to work together effectively, they must foster true and open communication based on trust and

acceptance. The sharing of life's goals, areas of interests, and other concerns are encouraged among team members. Exercises which stimulate team building and strengthen trust are promoted as well.

Ownership in the Business

Building on the idea that people inherently want to do a good job if they are encouraged and permitted to do so, HRM advocates giving personnel a feeling of ownership. One common example is for owners/managers to invite employees to contribute towards the development, plans, and review of the goals for the ranch. Also, they would be invited to share, and include, their own personal goals during the goal setting or review processes. Production incentives for employees are encouraged as well as delegation of responsibilities for certain ranch enterprises to one or more employees. Hiring spouses or children of employees at particular times can also lead to a feeling of inclusion and ownership within the business.

Commitment from the Employer

Often times a show of good faith by the employer is effective in creating a necessary level of trust within the team. This might take the form of revealing the financial records to those involved with the ranch. This particular

example serves two purposes: (1) it displays trust and commitment of the team by the owner/manager, and (2) it familiarizes everyone with the expenses, income, and the realities of the financial side of the business.

Findings

Manager/Employee Training

Just over one-half (53%) of the managers indicated they had specifically attended leadership development and/or team building training to strengthen their ability to work with team members for the business. Several managers stressed how important it was for them to have team members introduced to the concepts of HRM and/or other management concepts such as team building, goal setting, personal growth, and communication skills. Almost all of the respondents (98%) indicated they encouraged and paid for employees to attend schools, short courses, or seminars for the business.

Planning Meetings

As mentioned previously, planning is paramount in using holistic management. To more effectively run their business, these managers encourage ideas and suggestion from the rest of the ranch team. One effective method is to hold routine ranch planning meetings. Eighty-five percent (85%) of the

managers indicated they held regular (see Table 4.1) meetings with their team to discuss topics such as work issues, group progress, and problems.

Shared Meeting Facilitation. Eighty-one percent (81%) of the ranchers indicated that when the team met, they shared in the responsibility of facilitating these meetings. One persons' comment for this approach:

We all share in running the ranch meetings because I think it makes everyone have more ownership in this operation and gives my one employee a reason to pay attention and be a part of this business.

Table 4.1 Frequency of planning meetings reported on ranches surveyed.

Meeting frequency Distribution

Once per week	37%
Once per month	19%
Once per 2 months	30%
Seldom - never	14%

Personal Goals

Sixty percent (60%) of these managers indicated they were aware of their employees own personal goals and areas of improvement they were seeking.

Trust and Acceptance

Among members of these ranch organizations, 67% reported the feeling of trust and acceptance to be moderately high or higher. Seventy percent (70%) reported high cooperation when solving problems, and over 75% indicated a great deal of flexibility allowed for creative approaches to attain their goals. Perhaps more importantly, 74% of these ranchers indicated their current management strategy was effectively meeting the goals of the group. Following are some comments pertaining to this:

HRM has opened up communication and people now contribute more.

...and we use more brain power because everyone is involved now.

HRM encourages listening to those people you differ with including family.

We think better, probably more open to any ideas.

This has all created better and stronger relationships.

Less management stress. Makes us better time managers.

Improving trust and communication is sometimes painful as these respondents indicate:

I had to face up to the defects in my character. I had to realize that I can't please everyone. I had to become willing to change... which is extremely difficult.

It is becoming painfully clear that I must change some deeply entrenched habits to approach the door to communication and managing holistically.

Time Off

One aspect of ranching, often overlooked, is the amount of regular time employees or managers take away from the job. In today's day and age, a six and one-half to seven day work week is not as acceptable as it once was. These work obligations are still common with ranching and farming today. Almost one-half (45%) of the respondents indicated they now take more time off, and provide more time off for their employees than with their preceding management. Sixty-eight percent (68%) of the managers indicated they regularly take one to two days off during the week. About 75% of this group indicated this practice occurred two to four times per month depending on the season. In addition to taking some time off during the week, 84% of these managers reported they take an annual family vacation away from the business. Length of time varied, but 44% reported a break between four to nine days; 33% indicated a ten day reprieve, and 33% reported two to four weeks taken per year. More than 60% of the managers said they gave employees regular/annual vacations. More than one-half of those receiving vacations were given two weeks of time away. One manager had this response:

We provide a paid vacation of one week per year of employment up to a maximum of three weeks.

Production Incentives

Production incentives are integrated into the management for the well being of the employees in addition to optimizing production and/or minimizing expenses. These incentives can take many creative avenues. Fifty-eight percent (58%) of the managers indicated they incorporated employee production incentives. These programs ranged from simple profit sharing of net income to employee ownership of the business. Some examples are:

My employees are given an opportunity to run their own livestock for free spring, summer, and fall. I also give them the freedom to book recreational clients (new to the business), and beef and lamb customers for a percent of the profit.

Employees through estate planning are to inherit the ranch.

Most employees are summer help and they are given incentives for school or internships depending on the situation.

Raises and bonuses are given in cattle. Running expenses for these cattle are charged at actual running costs. This facilitates team members thinking like owners.

Employee bonuses are based on the overall financial growth of the business.

We allow our employees to run their own cattle and they are allowed to run more cattle the longer they remain at the ranch.

We pass on 10% of the ranches gross profit to each employee.

Creative Idea. One manager discussed a cost saving idea which he intended to implement. When a vehicle is purchased for the ranch, the owner or manager assigns the responsibility of care and maintenance to an employee, usually the primary user. The ranch then offers the title of ownership to this person after the truck surpasses some designated mileage, say 60,000 miles. The employee now has a very tangible incentive to care for and properly maintain this vehicle.

Another approach is employing the spouse. Seventy percent (70%) of the managers indicated they employed the wives of their core team during certain periods of the year. Upon seeing the operational goals from one ranch, this researcher noticed that two wives had responsibility of planting and also planning the water system for 1000 trees on the ranch.

Diffusion of Innovation

Diffusion is the process through which (1)an innovation (2)is communicated through certain channels (3)over time (4) among the members of a society. An innovation is an idea,

practice, or object perceived as new by an individual or other unit of adoption. Many social scientists maintain the most important immediate cause of social change in the rural United States is technological innovations in agriculture. The consequences of agricultural technology, while beneficial to many Americans, are far-reaching and sometimes unpredictable. Rural sociologists have been studying the diffusion of agricultural innovations for over 40 years and have built models which detail this process (Rogers et al. 1988).

Rogers indicates that in order for a new innovation to be accepted by others it must pass five criteria. It must show a (1) *relative advantage* over a prior practice; it must be (2) *compatible* with existing values and needs; (3) it must not be too *complex or difficult* to use; (4) it must show *trialability* (experimented with on a limited basis), and (5) it must produce *readily observable changes* to the receiver and others.

HRM integrates a number of new, non-conventional concepts and practices for the land manager. Technically HRM fits the definition of an innovation. However, most commonly the diffusion process introduces a single new type of machinery or technological process. Since HRM is a complex, whole process, rather than simply a new component

of an on-going process, diffusion may be slower. For this process to be done properly, it requires commitment across the entire farm or ranch.

CHAPTER 5

ECOLOGICAL THEORY AND FINDINGS

This chapter will discuss the ecological theory behind Holistic Resource Management and then explore how 43 holistic ranchers apply this thinking to "on the ground management".

HRM is partially based on managing and monitoring the four fundamental ecosystem processes operating on the earth's surface.

- 1) Water Cycling
- 2) Mineral/Nutrient Cycling
- 3) Energy Flow
- 4) Succession

Savory bases the management of these processes on four ecological principles he terms missing keys. These principles are:

- 1) The role of herds and their predators
- 2) Bio-decay capacity of natural environments
(brittleness)

- 3) The concept of (W)holism
- 4) The time dimension in soil, plant, and animal relationships

Savory formulated the first two concepts (herds and their predators and brittleness) after more than 20 years observing plant and animal relationships on the dry savannas of southern Africa. The concept of time and grazing is based on the work of Andre Voisin (1961). The fourth concept, holism, is what Savory believes unites the other three concepts.

The Role of Herds and Predators

Most prairie or savannah type ecosystems have developed through the influence of herding animals (prey) and the unique relationship they share with predators. When attacked, the herd's response is a rapid bunching together and fleeing (flight) from the danger. This behavioral response is a natural defensive mechanism for wild herding animals. An immediate result of this stampede-like behavior is a tearing and chipping action on the soil surface. This churning hoof action also incorporates plant material and animal dung and urine into the soil.

In North America this herding response has been observed with bison and elk herds under predation. Early

historical accounts describe how these large migrating herds would bunch and stampede for extended periods of time when attacked. Estimates of total number of bison migrating through the great plains vary from 60-80 million head (Callenbach, 1994).

Predators such as bear, mountain lion, coyotes, wolves, and man could trigger this herd response. There are other factors (e.g., storms, lightening, or fire) which can provoke the flight response as well. Regardless of how it was triggered, it produced significant disturbance to the surface of the soil.

Although the physical churning and tearing of the soil surface appears severe initially, it can produce long term benefits. This action breaks up crusted soil surface layers and incorporates plant material, manure, and urine back into the soil. A roughening of this nature can lower surface bulk density, lead to improved soil moisture infiltration and increased aeration.

Influence of Domestic Livestock

Savory maintains this type of animal behavior was, for the most part, removed with the introduction of domestic livestock. Domestic animals were bred and managed to be more gentle than wild animals, to gain weight, reproduce, and to be sedentary. The herding instinct for domestic

stock is much less prevalent than with the wild herds of the past.

Removal of the Predators

In the eyes of predators, introduction of livestock was welcomed. Domestic animals became a new feed source because of their relative abundance and because they lacked a strong herding instinct. Of course, owners of the livestock were not pleased with predation because it stressed the animals and caused considerable death loss. Soon ranchers "declared war" on predators including wolves, bear, mountain lions, and coyotes, by creating trapping and bounty incentives to eliminate the cause of their problems. They were successful.

By removing these animals, they also removed an integral part of the predator/prey relationship. The instinctual behavior of staying together in mass, or "herding when threatened" was no longer reinforced within consecutive livestock generations because there was nothing to threaten them. The predator/prey response is somewhat apparent in cattle of today, but is far less than the herding behavior of their ancestors.

The Effect of Fencing on
Native Vegetation

Fences were put up initially as border markers and later as tools to hold stock within certain areas. Certain native vegetation, which had evolved to withstand and thrive on the periodic severe grazing (grazed and then rested for many months) from migrating herds, was now subject to frequent severe grazing (grazed and re-grazed within days) because the animals were fenced in. This change in grazing dynamics created impacts which were more than many plants could withstand. They were overgrazed, became weak, lost vigor and began to diminish (rough fescue Festuca scabrella, basin wild rye Elymus cinereus, blue bunch wheat grass Agropyron spicatum, green needle grass Stipa viridula, and others). Range scientists today refer to these types of plants as decreasers.

The livestock herding instinct is much less than it was 100-150 years ago. Although herding behavior is difficult to replicate in the truest sense, the action can be duplicated using certain types of livestock management techniques. Reproducing this herd effect is one of many tools Savory describes as being available for managing ecosystem processes.

Bio-Decay Capacity of Natural Environments (Brittleness)

Savory maintains environments can be grouped within two broad categories by identifying the "rate of bio-decay" or "brittleness". The bio-decay capacity of an environment is a function of whether there is sufficient moisture in the soil surface environment to satisfy microbial decay organisms when temperatures are warm enough to support biological activity (Montagne, 1996). Amount and consistency of humidity, precipitation, and temperature regulate decay rate. Savory refers to this as degree of brittleness and rates an environment's brittleness on a scale from one to ten, with one being non-brittle (fast decay) and ten being brittle (slow decay). Depending on where an ecosystem falls on the brittleness scale, different ecological factors apply to its management (Savory, 1988).

A brittle environment would be one in which the humidity is consistently very low and the bio-decay rate very slow. This environment might receive as little as four inches of annual precipitation, but could receive up to 30"-40" and still be brittle. The key is that precipitation, temperature and humidity are inconsistent throughout the year.

Typically in a brittle environment, large bare patches of soil, possibly crusted, exist between plants. Any

plant material remaining from previous seasons growth (standing dead) turns gray and decays slowly, oxidizing in the air. For this organic material to be effectively returned to the soil surface, some form of physical mashing (weight of snow, stepped on by animals or people, driven upon, harrowed, burned, etc.) is required. Otherwise this material will remain primarily in the air above the soil surface, contributing little to the mineral cycle. Varying degrees of brittle environments can exist around the earth.

A non-brittle environment is the opposite of the above. The environment is consistently moist, humid, and often warm. Plant material is quickly and easily broken down and incorporated into the soil by a variety of organisms. Plants grow close together with little bare or exposed soil. Dead plant material (litter) decays quickly, and returns nutrients to the soil. This leaves the soil surface with high amounts of organic matter, a more granular soil structure and no surface crusting. A rain forest is a good example of a non-brittle environment. Varying degrees of non-brittle environments can exist around the earth.

Concept Of (W)holism

Of these four keys, Savory maintains that holism is the most vital in resource management. The notion that all

things are connected is as old as philosophy, but in the 1920's it was given a name, holism (from the Greek *holos*), and a theoretical base by a South African statesman-scholar Jan Christian Smuts (Savory, 1988).

In his 1926 book Holism and Evolution Smuts challenged the old mechanical viewpoint of science and in particular the notion that there could be no more in the effect of something than there was in the cause of something. Smuts came to see the world as not substance but flexible, changing patterns. "If you take patterns as the ultimate structure of world, if it is arrangements and not stuff that make up the world" said Smuts, "the new concept leads you to the concept of wholes. Wholes have no stuff, they are arrangements. Science has come round to view that the world consists of patterns, and I construe that to be that the world consists of wholes" (Smuts, 1926).

Savory maintains two points must be considered when managing holistically. First, management must look outward from the standpoint of particular wholes and goals in order to see and understand the pattern and meaning of details. Approaching matters from the other direction, from the specialized study of the details in isolation, leads to confusion because the "parts" have no meaning except in

relationship to the whole, which can never be seen from the perspective of the disciplines.

Second, to manage wholes at any level, people must define them in terms that relate their work properly to the greater and lesser wholes that make up our universe. This is possible because the basic principles governing the ecosystem are universal and equally relevant at all levels (Savory, 1988).

The Time Dimension in Soil, Plant, and Animal Relationships

The importance of the time dimension in environments where large herbivores played a major functional role was not recognized until recently (Savory, 1978; Voisin, 1961). Brief periods of grazing use by herbivores followed by rest from grazing appear necessary for maximum sustained production (Sindelar et al., 1995). For example, the bison and elk herds living and migrating across the Western Great Plains remained together. They grazed, watered, and bedded for the most part in mass. They were frequently on the move, seeking fresh feed and/or moving away from predators. Often, extended periods of time would pass before they would migrate back through a previously grazed area.

Savory incorporated his observations in southern Africa with work from the French researcher Andre' Voisin who had

realized "time" was the key factor in proper grass management. Voisin devoted his research to analyzing plant response to grazing. He concluded that managing the actual *rest period between grazings* (recovery time) and the *amount of forage removed* were the critical links to plant health, vigor and production (Voisin, 1961).

This discovery conflicted with western thinking. In the United States and Canada, range management theories were founded on the principle of controlling the *number of animals* in a pasture and *deferment of early use*, as the key to maintaining optimal range vigor (Heady, 1978. Stottart et al., 1975). The concept of rest period between grazings (recovery time) was not considered.

Time Control Grazing

The idea behind time control grazing is to replicate the grazing use that plants evolved to thrive on; quick periods of grazing (sometimes severe, sometimes light) followed by long periods of rest. Grass needs the stimulation of grazing to remain healthy and productive. Over long periods of time without this stimulation, these plants can become over-rested and decadent. When a grass plant is grazed, many things take place within its system. For a plant to recover from grazing, it must sacrifice stored

energy reserves within its root system to push out new leaves. Once the new leaves are exposed to sunlight and photosynthesis begins, replenishment or "recharge" is initiated for the root reserves. Depending on the time of growing season, this recovery process can range from three to twelve weeks, or more. During fast growth, and depending on grazing severity, some grass plants can recover in as little as fifteen days while during mid summer they might require sixty to ninety days of rest. If they are grazed during the dormant period, little regrowth will take place until spring growth reoccurs.

Furthermore, the rest period is dependent upon how much forage is removed (severity of grazing) from the plant when it is grazed. If the plant is grazed lightly (most of the plant is left), then few root reserves are required to push new leaves out, leading to a faster recovery time. If however, the plant is grazed severely (most of the plant is removed) then large quantities of stored reserves must be sacrificed to create and push out new leaves. An example might clarify this. Envision two green needle grass plants next to each other during fast growth. If one is grazed severely and one lightly the lightly grazed plant could possibly be ready for another grazing in as little as fifteen days, while the severely grazed plant might require

twenty-five to thirty-five days of rest to be fully recovered. Savory's definition of over-grazing is "grazing during active growth that is both severe and frequent." Another way to think of this is "grazing on sacrificial roots" or "taking the second bite too soon".

Implementing time control grazing can be accomplished two basic ways; (1) either by using cross fencing to hold the stock within grazable areas, and/or away from recovering areas; or (2) by using herders to migrate the stock around the grazing lands while keeping them off areas which are resting.

Rates of Grass Growth. Grass plants grow at varying speeds but are typically categorized into fast and slow growth rates. Fast growth is normally seen in the late spring to early summer, when soil moisture and temperatures are optimal for vegetative growth. After fast growth ends, slow growth begins somewhere in the mid-summer and continuously tapers off to no growth at plant dormancy. When planning grazing using time control the rule of thumb is; during fast growth-move the stock fast, and during slow growth-move the stock slow. This allows grazed grass plants to recover before re-grazing.

FindingsPlanning

Once again, planning plays a crucial role in managing the ecological entities of the farm/ranch business. Many of these people plan and document a landscape description (part of the three-part holistic goal), a grazing plan, and formally monitor their land.

Future Landscape Description. The landscape goal is intended to describe the future vision of the land; what it must look like, and how it must function. Sixty-nine percent (69%) of the respondents had written ranch goals. Of those people, 86% had a written future landscape description. The following is part of a mission statement from one of the ranches that participated.

The _____ Ranch is a family owned business that is dedicated to returning its land to that of the past. Where history records tremendous grasslands of unlimited potential, the environment is stable and balanced, wildlife is visible and healthy, creeks and springs flow, and the land is covered with a complexity of grasses. The country-side is clean, with the care and concern of all clearly evident.

Planned Grazing. Eighty-five percent (85%) of these managers design and document a grazing plan each year based on plant growth cycles and other biological factors. The planning is designed ideally to prioritize any unique plant

and animal parameters (rate of plant growth, poisonous plant periods, critical wildlife areas, special nutritional needs of the stock, and other biological factors), while taking into account past grazing use and current pasture condition. This helps to ensure the land, stock, and wildlife are maintaining health and vigor. This process of planned grazing is one of the tools these managers are using to move the land toward the future landscape component within the holistic goal.

Grazing Management

Of the 43 ranchers queried, 97% have changed their grazing management. This management is designed with "time" in mind, and focuses on concentrating the stock density within a pasture, but for a much shorter period of time. Stock density is the number of livestock per unit area at any moment in time. It is often described on an animal per acre basis. For example, rather than running 50 head in a 120 acre pasture for two months at a stock density of 0.4 animals/acre, they may place 400 animals in the same pasture for 7 days at a stock density of 3.3 animals per acre. The same amount of forage is consumed, but in a much shorter period of time. The plants will not have enough time to regrow and be grazed again too soon because the animals

are moved on to the next pasture. At this point the grazed (stimulated) plants can begin a "protected" recovery period. Furthermore, there are increased physical influences (concentrations of dunging, urinating, trampling, rubbing, etc.) on the soil surface with higher stock densities. By purposely concentrating this animal impact using attractants (e.g., hay, portable salt licks, shade, water, or rubbing posts), the effects of hoof action and trampling can be used to modify the soil surface and/or present vegetation. This impact might be focused on areas of thick sagebrush, or undesirable plants, that need a shock to their system. Such herd effect can provide the necessary disturbance. Table 5.1 provides examples of practices they are using. Stocking rate is the total number of animals on the total acres of the ranch.

Table 5.1 Key grazing management practices for survey group.

Management Practices	Frequency of Practice
Increased stocking rate	86%
Increased stock density	97%
Grouping more livestock classes and types together	77%
Use trampling(herd effect) as a tool	77%
Obtaining positive results from trampling	95%

Increased Stocking Rate. Some of Savory's earliest claims indicated that ranchers could actually increase their stock numbers over what SCS recommendations were, and still provide better care of their range. The data indicates that most of these managers have taken his advice and increased their herd size. Although amount of increase was not asked, some respondents indicated expansion of 30%-50% beyond prior stocking rates.

Increased Stock Density. Increasing stock density is one of the most popular practices of holistic resource managers. This is done primarily to capitalize on the tool of animal impact and to improve forage utilization. These people are creating increased stock density (number of animals/ pasture) in three basic ways:

- 1) Number of animals remain static and existing pastures are made smaller through the use of cross fencing.
- 2) An additional number of animals are brought to the ranch pastures without cross fencing taking place.
- 3) Different livestock classes or livestock types are being combined into larger herds.

A comment from one manager indicates his changes:

We have gone from two large pastures to 12 smaller pastures.

Grouping Different Stock Together. Many ranchers will not bunch certain classes or types of livestock together. For example, it is common to run the yearling stocker herd separately from the breeding herd(s); to run the sheep herd apart and never ahead of cattle; or to never run cattle, horses, and sheep together in one bunch. These managers are challenging this thinking. Almost eight in ten are grouping more animals together than in the past. This is some of their reasoning:

- 1) More forage is being rested, at any one time on other parts of the ranch
- 2) More efficient pasture utilization
- 3) Time efficiency moving and monitoring the livestock
- 4) Higher stock density applies the tool of animal impact more effectively

Following are comments regarding the grouping of stock:

I run everything together now during the growing season; cows, sheep, two year old heifers, yearlings, and the horses.

We used to run calves, yearlings, 2's and the brood herd separate giving us 4 herds. They all run together now except calves for 6 months after weaning.

Sheep, yearlings and cows are all together lately.

We now have one herd of mature cows, yearling and 2 year old heifers, plus ewes and lambs plus the horse herd... they were run separately before.

Herd Effect -- A Powerful Tool. According to many of the managers, the effect excited animals have on the land (tearing and chipping of the soil and plant material by hoof action) can be a powerful tool. More than three-fourths (77%) of the managers reported they used the tool of herd effect to specifically trample out brush or undesirable plants, or begin to smooth and heal eroding gullies. Ninety seven-percent (97%) of those using this tool reported positive results. One rancher had this to say about herd effect:

Make certain the treatment is not too severe, is quick, and the area is rested afterwards. Herd effect can be very powerful.

The result of excess animal impact can be observed at any permanent salt lick. Due to the steady contact from hooves, and no recovery/rest period from this impact, it is difficult for even the most persistent plants to survive. It is not uncommon to see a large bare area surrounding the lick. The same type of effect in urban areas, can be seen under most park swings. The constant impact precludes plants from establishing there.

Riparian Management. Recently, riparian management has become a concern among land managers. Eroded streambanks, heavy siltation and down cut stream channels are not only contributing to stream instability, but can

also disturb fisheries habitat and spawning areas. Eighty-three (83%) of the managers responding indicated they have increased their care for riparian areas. The two primary tactics mentioned were limiting the length of time stock were allowed along the streams and/or limiting (through fencing) the amount of area where the animals had access to water. Another tactic available is to fence the stream away from stock, and pipe the stream water to an off site watering trough.

Land (Biological) Monitoring

Sixty percent (60%) of the respondents formally monitor and document the condition of their land. The biological monitoring procedure suggested by the Center for Holistic Resource Management requires a line transect along which data are collected on various soil surface conditions (e.g. erosion, bare ground, surface crusting) plant and animal bio-diversity, and plant age structure and vigor (Bingham, 1990). Changes in these parameters indicate whether management practices are moving the land toward or away from the desired landscape description.

Wildlife

All of the ranches reported having wildlife. Sixty percent (60%) of these people considered wildlife an asset. This correlates closely with those who considered wildlife a

business enterprise. Two-thirds (65%) of these ranchers have implemented wildlife management practices on their land. Following are comments regarding wildlife management practices:

I am now planting trees, and will develop a pond this year and will have cropland paddocks with bird cover along the edge.

I am now timing our grazing around nesting, fawning, and calving.

We try to leave the creek area for the deer and beaver.

We now keep the cattle out of the elk calving grounds.

We have gone through extensive (and expensive) stream bank rehabilitation. We have also put out bluebird boxes.

We have planned our grazing for nesting birds--targeting specific perennial grasses for native game birds.

Concerns about Predators. Historically, most ranchers have little liking for predators, and most of them are against wolf reintroduction. This question was posed to the respondents; Are there any predators you do not want on the land? Forty five (45%) answered "yes", 55% answered "no". Some of their comments follow:

Don't need wolf....not because of the animal
....because of the politics.

Maybe the wolf would present some problems but I believe with the condensed numbers of cattle we are using that I would handle wolves better than ranchers with cows spread out all over the place.

We do need coyote control...but not elimination.

Undecided, I'm probably not too excited about wolves.

The fox, coyote, and coons need to be limited but not eliminated.

We have coyotes and fox that are a problem for our lambs, I am struggling to accept them as part of the ecosystem.

Problem Species

Most ranch managers typically devote a certain amount of time, money, and effort addressing what they consider problem species such as weeds, insects, and rodents. In addressing these "problems", tradition often dictates the use of chemicals, mechanical inputs, or other "quick fix" remedies. According to Savory, often the infestation or encroachment of problem species is the symptom of a larger problem. He indicates that putting efforts into addressing the symptom rather than the cause of the problem is often counter productive. By thinking holistically and considering the idea of cause and effect relationships, efforts put towards the real cause of the problem are more effective. Often, implementing different grazing and land management tactics can rectify the problem.

Of the managers using HRM, almost 60% are spending less time, labor, and money on problem species in general.

Seventy percent (70%) reported using fewer herbicides, with 48% indicating a decrease in undesirable plants. It appears they are looking at "problems" with different eyes, as these comments suggest:

It finally dawned on me that I've been spending money trying to fix the symptoms of "problems" instead of what was causing them.

We now pay much greater attention to cause and effect of all actions and how they effect the whole we are managing.

Fertilizers

Fifty-seven percent (57%) of the holistic managers indicate they have decreased their fertilizer consumption by amounts varying from 35% - 100%. However, over one-half (52%) of them reported increasing the use of manure for fertilizer on their lands. This indicates they realize the benefits fertilizer can provide to land production, but they are backing away from the use of the synthetic variety. They may be using the testing guidelines of energy/wealth source and use, and whole ecosystem testing to arrive at these decisions. These tests are discussed in more detail in Chapter 2 and Chapter 6.

CHAPTER 6

ECONOMIC THEORY AND FINDINGS

Wealth Generation

This chapter will discuss the financial testing guidelines and theory of HRM. It will further present "on the ground" financial practices applied within these ranch businesses.

Savory indicates that most goals people select require wealth generation. The concept involves an understanding of what he considers to be the three most basic sources of wealth: mineral dollars, paper dollars, and solar dollars.

Mineral Wealth Dollars

Money derived from labor, human creativity, and raw resources (e.g., soil, timber, dung used as fuel, water, oil, coal, gas, gold, silver, or uranium) is referred to as mineral dollar wealth. This wealth has two characteristics:

- 1) The raw resources can either be used cyclically over a long time, such as recycling of paper and metal products, or can be constantly regenerated with inputs of solar energy, such as soil and timber.
- 2) The raw resources can be used non-cyclically in a "once only" type of consumption, (e.g., most oil and gas consumption, eroded soil, and ground water too polluted for reuse).

Paper Wealth Dollars

Money can be acquired through human creativity and labor alone without direct utilization of raw resources. This is accomplished through activities such as managing organizations or wealth of others (investments) and providing basic or professional services (e.g., teacher, lawyer, accountant, civil servant). These services are usually paid for in currency (paper dollars). Wealth represented in currency or by paper certificates is often instantly and totally available to the owner, unlike wealth which may be tied up in raw resources or items such as machinery. Professional speakers, athletes, consultants, and lawyers can charge fees running into thousands of dollars an hour for labor or services rendered. This money can vanish (such as a bad stock investment) as quickly as it appears. Paper dollar wealth is backed by confidence in the

government and the banking system, rather than by any substance.

Solar Wealth Dollars

Solar dollars represent wealth produced when human creativity and labor and renewable solar-generated energy (sunshine, geothermal heat, wind, tides, wave action, and falling water) are used to produce products which are converted (sold) into currency, typically when solar energy-generated plant material is harvested. Savory recommends that human endeavors utilize renewable energy as much as possible since it is theoretically infinitely renewable. This type of wealth generation will tend to not damage our life support system or endanger humankind. This is the only form of wealth which can actually feed people.

Economic Testing Guidelines

The HRM model utilizes economic testing guidelines to help managers decide on future management strategies. They are: (1) weak link, (2) marginal reaction, (3) gross margin analysis, and (4) energy/wealth source.

Weak Link

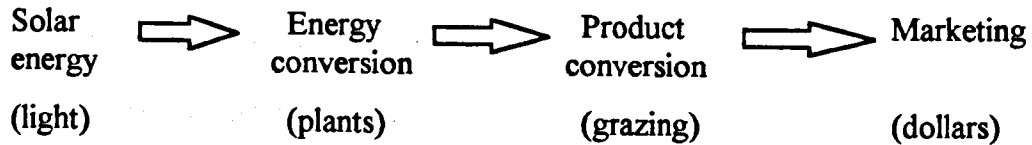
In any chain, there is one link which is the weakest. If the objective is to strengthen the entire chain, the

weakest link must be reinforced. Once this link is stronger than any single other link, it is no longer the weakest link. Therefore, effort to further strengthen this link is wasted because there is now some other weaker link in the chain. There are three aspects of the weak link testing. *Solar chain* applies specifically to economic testing. The *logjam* and *problem species* tests apply to social and ecological aspects of the business.

- 1) *Solar chain*: If the objective is to increase revenue, then often, money and effort are required to improve some area of the business. In agriculture, producers change sunlight into dollars. This process follows a chain of sequences, termed a solar energy chain (see Fig. 6.1). A producer must find where the weakest link is in his chain. Improvement efforts put into anything but the weakest link of this chain are wasted.
- 2) *Logjam*: Asks "Is the entire operation flowing smoothly toward the goal." Commonly, the logjam is a "people" one. Misunderstandings, or poor communication are often factors.
- 3) *Problem species*: This part of the test allows managers to identify weak areas in the life cycle of a problem species. By identifying and capitalizing on these

weaknesses, managers are more able to control the undesirable species.

Figure 6.1 Solar Energy Chain : Diagram of steps to turn sunlight into solar dollars.



Marginal Reaction

The marginal reaction test assures that a manager's commitment of time, effort, and wealth provides the maximum possible thrust toward the three-part holistic goal. When applying it, a person asks, "How should each additional unit of money, time, and/or labor be invested to provide the greatest return in terms of my goal?"

Gross Margin Analysis

If profit is an essential part of the goal, then the test for gross margin analysis should be applied. The intent is to assist in determining the strongest possible links of product conversion and marketing in the chain from sunlight to solar dollar. To be most profitable a producer needs to find an enterprise or combination of enterprises

that bring in the most for the least additional cost each year.

The key to gross margin analysis is the careful distinction of fixed (overhead) and variable (direct) costs at a given moment in time. Fixed costs exist no matter what or how much is produced. Variable costs are a function of volume of production.

The advance applications of gross margin analysis take into account the major variables that define risk. What yields will the ranch achieve? What will the prices really be? To see the implications, Savory suggests projecting worst, average, and best cases, starting with the variable least within the producers control.

Energy/Wealth Source and Use

This testing guideline asks two questions: (1) Is the resource from which the producer is intending to create wealth being used sensibly for the good of humanity? (2) If the manager is planning to use any resource in a consumptive way, such as using chemicals or fossil fuels, is he/she doing so as sparingly as possible, while trying to build toward less consumptive methods?

Financial Planning

HRM encourages the use of an annual budget for each enterprise on the ranch. Each enterprise should be broken into fixed and variable costs. With this structure, financial decisions and strategies can be tested by using the financial testing guidelines.

Findings

Financial Planning

Seventy-seven percent (77%) of the respondents indicate they spend time devising an annual financial budget and then monitor this plan throughout the year. Slightly over half (51%) of these managers have completed estate planning.

Production Theory

This population of ranchers has a unique outlook on their overall production theory. Some seem to have applied the concept of solar dollars in a creative fashion. One ranch owner from Wyoming responded:

Sunlight is captured by plants and converted into additional plant matter, our livestock in turn graze that plant matter and convert it into additional meat. We convert the additional meat into dollars at the sales ring....All I really am is a used sunlight salesman.

Another manager summed it up this way:

We always figured the yearlings were the bread and butter for this outfit until someone challenged our reasoning. Thinking back now, we kind of had the cart in front of the ox. We make money by selling all the sunshine we can ... the yearlings are just the containers we use to box it all up in.

New Ranch Enterprises

The concept of diversity does not only apply to ecology. It can and should be considered when finances are involved as well. The following data relates to the idea of diversification of enterprises. In addition to the fundamental enterprise of raising beef for the business, 56% of the managers incorporated additional business enterprises into their operations (see Table 6.1).

Their thinking relates to the idea that with diversity of enterprises, can come stability of income. The saying, "Don't put all of your eggs in one basket" is heeded on many of these ranches. Twenty-four managers added at least one enterprise, some added two, and one manager added three new ventures. The most popular areas involve recreation, organic production and fencing.

Adding recreation as an enterprise is easily explained; they have realized wildlife can provide income. Deer, elk, antelope, trout, are no longer considered "just mooching off the land" as they are now viewed as a resource contributing to the business. This explains their efforts toward

wildlife management practices and habitat improvement. They now have greater appreciation for an aspect of the ecosystem rarely accepted in the past. Further, they now have incentives for proper riparian stewardship because the fisheries can be viewed as an asset as well.

Table 6.1 New business enterprises added to ranches by HRM managers.

<u>Enterprises</u>	<u>Times mentioned</u>
Recreation	
Wildlife (fishing and hunting)	5
Guest business/Outfitting	3
Ranch tours and barbecues	1
Cabin rentals	1
Organic Production	
Organic beef	3
Organic pork	1
Organic Sheep	1
Livestock	
Sheep	3
Swine	3
Roundup Wools	1
Retail meats	1
Goats	1
Custom work	
Fencing construction	2
Fencing dealership	1
Custom haying	1
Farming	
Row crops	1
Timber	1
Grass seed business	1

Organic production is another area where several people indicated expansion. This has occurred partially from the adoption of holistic management, which has helped people reduce or stop the use of some chemicals. If a ranch operation can be certified chemical free, it can then begin to qualify for organic status. With proper marketing, organic products can realize a 10%-20% premium over non-organic products.

The number of off-ranch fence building enterprises has increased as these ranchers gained experience and knowledge of new fencing techniques while building the cross fencing necessary for their grazing management. Many are using New Zealand electric fence methods, because it is half the cost of barbed wire, less dangerous, faster to build, and very effective at stopping the livestock. This type of fencing is relatively new in the US, and requires the use of tools and techniques different than barbed wire fence. Several of these ranchers have extended their enterprise beyond the borders of their ranch by becoming fencing contractors or dealers, within their communities.

One producer had this comment about additional enterprises:

Just about everything is an opportunity if you can view it holistically.

Enterprises Eliminated

Twenty-three percent (23%) of these managers commented they had also eliminated certain enterprises in their transition to holistic management. The elimination of grain and hay and registered cattle enterprises were each mentioned three times. It may be that grain and hay production often require considerable outside inputs such as machinery, equipment, fuel, seed, fertilizers, and pesticides. These ranchers may have used the gross margin analysis test and realized these ventures were costing more than they return. Any registered livestock business requires labor and paper work which exceeds a normal commercial operation. In these cases, it is likely that the gross margin analysis testing indicated the returns did not justify the expenses. One manager had this comment about his change of enterprises:

We have not really eliminated enterprises, but we have changed our emphasis i.e. pasture is replacing hayland, and sheep were started about the same time as this. Holistic management may have been the necessary shove.

Expenses

Expenses are a necessary part of any business. The primary objective in any successful business is to minimize expenses, or to at least maximize the benefits of them.

Responses from managers indicated they had expenses which

both increased and decreased in their transition to holistic management.

Decreased and Increased Expenses. Sixty-two percent (62%) of the managers indicated they had expenses which decreased in their change to holistic management (see Table 6.2). The most common areas of decrease involved labor, feed, chemicals and fertilizer, fuel, maintenance, repairs, veterinary, and interest expense.

Sixty-five percent (65%) of the managers indicated there were also areas of increased spending since adopting holistic management. The most frequent areas of increase were for cross fencing, water developments, wages, and education and consulting.

If you look at Table 6.2 carefully, notice these people are still using, and spending money on, technology. However, they are shifting their emphasis to different types of technology. They appear to have made a long term change toward a strategy of using mineral dollars to generate solar dollars. Fencing and water development expenses are replacing petro-chemical expenses. Savory indicates chemicals, fencing, and materials required for water developments all belong in the category of mineral wealth dollars (i.e. they come from raw resources). Furthermore, all of these items

are used to help the rancher generate increased solar dollars.

Table 6.2 Expenses which increased and decreased for ranchers managing holistically.

Expense	% Reporting Increase	% Reporting Decrease
Labor		40%
Fertilizers & Chemicals		29%
Fuel		29%
Maintenance		15%
Trucking		7%
Custom work		3%
Seed		3%
Equipment purchase		3%
Bulls		3%
Feed	10%	44%
Repairs	3%	26%
Veterinary	6%	26%
Interest	3%	18%
Pasture lease	6%	15%
Insurance	10%	7%
Fencing	50%	
Water Development	36%	
Wages	23%	
Education & Consulting	20%	
Taxes	10%	
Business Travel	3%	
Phone	3%	
Fuel	3%	

The difference however, lies in the origin of each raw resource. Chemicals (fertilizers, pesticides, fuels, etc.) come from a non-renewable source...petroleum products. Electric fencing materials, and water development materials

(pipe, water troughs, wood posts, cement, etc.) are somewhat dependent on petrochemical inputs, but can be recycled to some degree and come from more renewable resources than oil. The energy/wealth source and use test may have indicated this to the ranchers.

The marginal reaction testing guideline may be indicating that proper grazing management (by using cross fencing) will take them more effectively to their holistic goal, than the use of other inputs. It is apparent these ranchers are still using technology to generate income, however with this approach they believe they can enhance the cost to benefit return of mineral wealth dollars to solar wealth dollars. One rancher's comment:

Its different every year. We have built a little more cross-fence, a few more water developments, and attended some courses which we would not have spent if not involved with HRM.

There were few comments about decreased labor expenses, however one ranch manager indicated this strategy; he "let go" one of his three employees, delegated additional responsibilities to the other two and gave them both a nice raise in pay. He saved money on his total labor bill and everyone left in the management whole was happy. This shows how creativity and delegation made a difference on one ranch.

Many ranchers indicated a decrease in feed expense while some indicated an increase. The decrease in expenses may relate to changes in livestock management practices. This is discussed further in the livestock production section of this chapter. The increase in expenses may be from those who have begun to purchase their hay rather than continue to raise and harvest it themselves. Even though their feed expense may be higher, their equipment purchases, maintenance and repair bills will be less. One rancher comments:

Our total feed expenses have increased because we are now carrying over 50% more animals on the same acreage. On a per head basis feed costs have gone down however.

Livestock Production

Nearly all the managers are raising livestock as a primary source of revenue. Almost all of them raise cattle in addition to one or more enterprises.

When livestock are involved, there are certain management practices which can enhance their production. Breeding must be efficient and effective, and tactics promoting optimal individual animal performance (animal health, daily gain, conception rates, and weaning weights) should be followed. Preferably the stock are handled using low stress techniques and treated quickly for sickness if and when it

occurs. Attempts are usually made to minimize the problems created from blood sucking (and disease carrying) insects as well.

Respondents were asked to report the changes involving animal management since choosing to manage holistically (see Table 6.3).

Table 6.3 Changes in animal performance and management practices reported by ranchers managing holistically.

Observation	Frequency of Response		
	Increased	No Change	Decreased
Conception rates	41%	49%	10%
Sire: Dam ratio	2%	36%	44%
Use of insecticides	3%	42%	55%
Fly problems	10%	39%	51%
Medication use	3%	46%	51%
Use of hormones	3%	58%	39%
Production per animal	69%	24%	7%
Production per acre	93%	7%	---
Time spent with animals	90%	10%	---

This table indicates several aspects of change involving livestock management. Any producer wants to see the best conception rates possible. This is often dictated by forage quality, herd health, and breeding efficiency. Sire:dam ratios, with cattle, commonly vary from 1:20 to 1:35 depending on the pasture. The ratio is often less (1:20) when the stock are in large or rough pastures. This

forces bulls to cover more territory traveling from group to group in search of cycling cattle. Remember, these domestic stock have little instinct to stay together as a herd. From the information presented above, the sire:dam ratio has decreased while conception rates have increased. This could be attributed to the additional use of cross fencing (making several pastures out of one) on these ranches. Consequently, the bulls have less country to cover and they can do their job with more efficiency. Thus, a cut-back of bulls is possible. So rather than using four bulls per 100 head of cattle, that figure might be cut to three bulls per 100 head and still maintain optimal conception rates.

As earlier mentioned, blood sucking insects (e.g., flies, ticks, lice, etc.) often become a problem for stock. They are an ubiquitous part of the herd, but will often concentrate on animals that are weak and/or sick. They furthermore, can spread blood born disease from sick animals to healthy ones. Because of this, most ranchers put effort into controlling these insects through a variety of methods. Most of these involve the use of insecticides applied through either sprays, pour-ons, injections, lick blocks (orally), or treated rubbing posts. More than one-half of these managers indicate they are using less insecticides for their stock. Surprisingly, they also reported fly problems

have decreased. This may be a result of several circumstances. One example is to use time control grazing to "outrun" the pests. For example face flies tend to lay their eggs in fresh manure and have an incubation of about five days before emergence. If the pasture's grazing periods are short (fast moves for fast growth) the animal herd can in effect graze through pastures faster than the flies can emerge. Another idea for fly control is the use of natural predators. Some birds will follow and live with livestock, feeding on the flies. One rancher indicated he had seen a large increase in "cow birds" since stopping the use of insecticides. There are other methods of bio-control as well. One veterinarian (not part of this study) reports that he controlled manure breeding flies by using a tiny insect called "the Fly Predator". These non-stinging members of the wasp family attack the larvae of stableflies and houseflies where they develop, especially in manure. Because fly problems have decreased, there is probably less spread of disease within the herd. This has decreased the necessity of medical treatment as well.

Most managers report an increase in both production per acre, and production per animal. An increase in production per acre can be explained by the fact that these ranchers are now carrying more stock on the same amount of land.

Production per animal is more difficult to explain as some research indicates production per animal will remain static or decrease using "intensive rotational grazing". According to Bob Gillen, range scientist at Oklahoma State (Purnel, 1996), he has never seen any trials where animal performance increased using these methods of grazing. Although the HRM managers are probably not using their forage as intensively as what Gillen refers to, they are both based on increasing stock density and controlling time and recovery periods for the plants. It was interesting that the ranchers managing holistically observed increased animal performance. Increase in conception rates may be a contributing factor in this response.

Later Calving Dates

Two producers reported they used to calve in January and February to get the biggest animal possible in the fall, but now calve in the summer. They have found their savings from avoiding winter calving costs (e.g., feed, labor, supplement, heat, medicine, mileage, veterinary, death loss) more than offsets their decreased weaning weights in the fall. Calving time is when the herd's requirements for peak nutritional and sanitary needs are the highest. Typically producers will calve in sheds (if they have them) to protect the mother and her newborn from the cold. They will often

spend countless hours anytime of the day and night monitoring and helping to deliver calves, then drying and warming them up. This high labor demand normally lasts for two months or more. In addition to this, it is important to maintain high sanitation standards within the sheds, cleaning them daily, to reduce the chance of disease for the calves. Scours is commonly the biggest problem in this situation.

At no time during the year are the herd's nutritional requirements higher than when lactation begins. Unfortunately, for ranchers who calve in the winter, this is when pasture production and forage quality are lowest. Total supplementation of feed becomes necessary to maintain the condition of the mothers and their newborn. This requires loading, transporting, and unloading (often by hand) the forage to the animals. It is often necessary to continue this feeding program well into the spring. This maintains herd health and condition which is essential to optimize chances of conception. The winter feed bill on many ranches is the largest expense they have.

Compare the above scenario with one which is nearly opposite, where the calves are born in June-July. They are born on clean lush grass, without cold weather and, all the possible nutrition the mothers need is provided by what they

harvest themselves. Furthermore, disease problems are minimized because the animals are calving out in the pasture and sunshine. Exposure to the typical disease rich environment of the calving sheds and pens is averted. One rancher who made such a change wrote:

One of the big changes we have made as a labor and expense saving measure was to change our calving program to mid-summer (July-Aug.). This has eliminated the need for calving facilities and losses due to temperature and sickness as well as health problems at weaning time. We now wean in mid May and onto green grass with little stress. The cows are also under little stress the last trimester and on better feed. They drop healthier calves with birth weights down 10-15%.

This information is interesting because of the birth weight observation. Lower birth weights are a desirable trait. A smaller calf at birth requires less effort and strain for the mother, leading to fewer complications. Many pure bred cattle producers have been selecting for low birth weight cattle types.

CHAPTER 7

RESULTS OF HRM IMPLEMENTATION

The previous chapters have detailed the management changes made on these 43 ranches. This chapter will focus on what these changes have produced. What has happened to the people, the finances, and the land? Has there been a net benefit from this management change? Do these ranchers view their lives and land as better than before? Do they want to continue this management?

Satisfaction

More Profit

Eighty-two percent (82%) of the managers indicated their business(es) were making more profit using holistic management than with prior management techniques. Seventy percent (70%) of these managers reported they made a net profit in 1992. Even though eight of ten indicated they were profiting more, this could also be interpreted as "losing less money" as well.

The financial information was gathered just after the 1992 year. At this time cattle prices were approximately twice the current (1996) market price. Divulging specific information regarding finances is difficult for most ranchers. There appeared to be some resistance among these respondents, as well. However, twenty-five ranchers did provide some information pertaining to increased profit (see Table 7.1).

Table 7.1 Percent increase in profit on twenty-five ranches managed holistically.

Percent Increase in Profit	Frequency Distribution
4%-12%	36%
15%-35%	40%
35%-99%	NA
100%-200%	20%
500%	4%

In financial planning, Savory recommends determining a necessary and reasonable profit before budgeting expenses. Then, the predetermined profit can be blocked out from the working budget. The annual budgeting is then calculated using the remaining balance of estimated revenue. This seems like an elementary approach, but is critical because of the human tendency to let expenses rise to the level of income, leaving no profit. The survey did not determine how much financial planning is actually occurring. However,

Table 7.1 implies that all 25 ranches that supplied financial information had increased profit. Most notable is the 40% of this group with profit increases of 15%-35%. These are increases one might expect when providing a value added product. It appears there can be benefits from the hard work involved with financial planning. Note that five ranchers (24%) reported profit increases ranging from 100%-500%. Such increases can easily be due to initiating and following through with financial planning. A few managers indicated their financial picture had not changed, or worsened using holistic management. These comments elaborate:

We have seen an increase in profit only because business is growing, we do not think it is from the HRM process however.

Innovation can sometimes be costly.

However the majority of answers indicate something is working better. These types of comments were more common:

We went from a loss to a good profit.

Our financial debt has been eliminated.

We had a profit of \$40,000 in 1992.

Happiness

Respondents were asked to rate how their satisfaction levels had changed in key areas of their lives since adoption and implementation of holistic management. Table

7.2 presents these changes as increased or decreased satisfaction.

Table 7.2 Changes in socio-economic satisfaction levels for 43 HRM managers.

Indicator	Frequency of Change in Satisfaction Level		
	Increased	No Change	Decreased
Economic satisfaction	90%	10%	---
Personal happiness	86%	14%	----
Family happiness	76%	18%	4%
Job pleasure	86%	10%	4%
Vacation time	60%	30%	10%
Community involvement	60%	33%	7%
Children returning to ranch	20%	80%	---
Employee turnover	12%	66%	22%

This information suggests several aspects of their lives showed positive change. More than 75% of these ranchers reported increased personal and family happiness, and job pleasure. This may relate to the 90% reporting increased economic satisfaction. In today's day and age finances are often hard to separate from personal satisfaction. The stresses involved with economic concerns can be wearing on personal and family relationships.

Sixty percent (60%) reported increased satisfaction from spending more time on vacations and community involvement. Perhaps with improved finances it is more

possible to afford the cost of a vacation. Maybe a more efficient management style has allowed increased time to be away, or be involved with community matters.

Respondents were asked to describe the advantages of HRM. Following are comments related to the issue of satisfaction:

More profit, less work, more fun, improving the land, improved livestock performance. Identifying and achieving personal goals. Resolving long standing family problems. Learning to become more physically, emotionally, and mentally fit. Becoming a human being rather than a human doing.

Sustainability! We know where we are going. The excitement of seeing your land change toward what you planned for it to do.

The biggest advantage of HRM is being able to stay on the land.

Healthier environment, better cattle, reduced expenses, and greater opportunities for employees.

Quality of life improves which says a lot. Knowing you are working with the ecosystem, production increases, observation skills develop, and more appreciation for the land and animals.

Increased production, better family/employee relations, and the land is in better shape.

Lower costs, clearer vision, better defined purpose and goals, and a real sense of satisfaction!

Areas of Decreased Satisfaction

There were also areas where satisfaction levels had for the most part remained the same or showed signs of decrease. This is not to say that "remaining the same" is bad, maybe things were good before HRM was adopted. It points out however, there may be other factors which should be considered when looking at these issues.

Employee Turnover. There are always costs associated with losing and replacing an employee. The process of locating and interviewing a potential employee can be time consuming, the orientation and training can be frustrating, and for a while a higher frequency of mistakes on the job are bound to happen. The best alternative is to keep employees happy, fulfilled, and desiring to stay with their employer.

With the effort these producers put into improved management/organizational skills (e.g., employee incentives, vacations, team planning meetings, and collaboration), this researcher is surprised that satisfaction with employee turnover had not improved relative to other indicators. Although two-thirds of the managers reported no change, 22% indicated decreased satisfaction. A small percentage (12%) observed improved satisfaction in this area. This may indicate employee/employer relationships are simply

difficult, regardless of what is done. One rancher had this comment:

The employee/employer relationship becomes very complex (in a good way). But often fails to GET THE WORK DONE. The labor intensive character of the management results in more of a problem than I first mentioned."

Drudgery of Planning. This question was not asked specifically, but manifested itself in several of the comments made by these producers. It is a fact that planning is critical to the HRM process. When one considers the amount of time required creating goals and devising strategies and tactics to optimize and monitor ranch operations, he/she must realize this time could also be spent riding through the stock, moving the irrigating water, or doing a multitude of other things. These ranchers love to be out on the land, and it is apparent they find the planning one of the more difficult pills to swallow. Following are comments made when respondents were asked to describe the drawbacks of HRM.

There is greater opportunity to make mistakes and much more time needed for planning and management.

A lot of time is spent in process rather than doing, in a literal interpretation it seems like all management and no production.

There is more time involved in planning. You can't just put cattle in a pasture and leave them for a month or more. You need to check the pasture everyday.

The paperwork and planning, inconclusive and vague results of monitoring. Lack of organized support and information from the Center for HRM.

A paradox seems to exist however, as this planning process is often disliked, yet it appears to be an integral component for success. Several managers commented:

The planning is critical to the management... but I hate doing it... and yet it, probably more than anything else has helped dig this outfit out of a hole.

The disadvantage of HRM is that it forces you to sit down, think, and plan things out. The advantage of HRM is that it forces you to sit down, think, and plan things out.

HRM has given us a better planning and decision making process for every enterprise on the ranch... all the way from grazing to family.

Through setting goals for this ranch we have been able to become completely debt free by the spring of 1992, which is one year sooner than we had planned.

Children Returning to the Ranch. A primary component of the concept of sustainable agriculture is to have people willing to replace those who must eventually, leave the land. Twenty percent (20%) of these ranchers indicated an increase in satisfaction regarding "children returning to the ranch". Although satisfaction did not decrease, the majority indicated HRM had not changed their satisfaction level regarding this aspect. It is intriguing that with a more "people oriented" approach to ranching, the return of

succeeding generations was not significantly affected. This might change with time.

Social Acceptance Of Holistic Managers

It is obvious that the concepts and management methods involved with HRM are a "far cry" from traditional practices. With this deviation from the "norm" comes a degree of skepticism from others. This is to be expected anytime a traditional practice is challenged. Social scientists would probably classify our 43 ranchers into the categories of *innovators* and *early adopters* in the diffusion of innovation concept (Rogers et. al., 1988). These two groups of people make up the first 16% of a society to adopt a new idea. Whether these holistic managers want to or not, they have become pioneers within their communities, and are the catalysts for the process of social change. Since their change of management, 85% of the respondents indicated their support from neighbors remained the same or improved since changing to HRM. However, there were a number of comments which portrayed negative feedback from their neighbors and community. Several of these comments follow:

...sharing the information can be tough, we are forging a new path without a whole lot of leaders out there.

... "Implementing" HRM in uninformed or openly hostile situations is another story.

We have alienated ourselves somewhat from fellow farmers/ranchers because we are doing things different from the norm and it worries people.

We have received negative feedback from other people when they see we are doing something different from the norm.

Change in Ecological Condition

Respondents were asked to indicate ecological changes observed since their adoption of HRM. Questions focused on observations of key indicators established by the National Research Council (1994) associated with the health of soil and ecological processes; water and mineral cycling, energy flow, and succession. Table 7.3 presents the indicators and the direction of change. As discussed previously, 60% of the respondents reported implementing a formal land monitoring program on their lands.

Most land managers trying to optimize forage production, are pleased to see an increase in; number of grass seedlings, plant diversity, litter cover on the soil, and water infiltration. They are also pleased to see a decrease in; spacing between plants, soil erosion, and amount of soil crusting on their lands. Almost all of the survey group observed these changes, and attributed them to their management method.

Table 7.3 Changes in indicators for ecological health of lands managed holistically.

Indicator	Process	Frequency Of Response		
		Decreased	No Change	Increased
New seedling success	succession	3%	12%	85%
Plant diversity	succession	---	15%	85%
Litter cover on the soil	mineral cycle	---	13%	87%
Water infiltration into soil	water cycle	---	18%	82%
Soil erosion	water cycle	68%	15%	17%
Amount of soil crusting	water cycle	69%	21%	10%
Spacing between plants	energy cycle	37%	23%	40%

One inconsistency was spacing between plants. Forty percent (40%) saw an increase, and similarly 37% reported a decrease in plant spacing. This may be erroneous due to possible ambiguity within the survey question. A decreased spacing between plants is desired because this indicates more plants growing on the same unit of land, resulting in less bare soil (good for water cycle), higher energy flow and more forage. An increased plant spacing would indicate fewer plants per unit area, increased bare ground (bad for water cycle), and lower energy flow. If the respondents did observe a larger spacing between plants, this indicates negative change because amount of bare ground is a key indicator for the water cycling component of range health.

Wildlife Observations

Respondents were asked what changes in wildlife they had observed. Discussion in Chapter 5 detailed specific management practices they implemented for the wildlife.

Table 7.4 presents the result of these practices and indicates an overall increase in number and diversity of wildlife.

Table 7.4 Wildlife changes on ranches managed holistically.

Indicator	Frequency Of Response		
	Decreased	No Change	Increased
Number of wildlife	---	28%	72%
Diversity of wildlife	---	58%	42%
Diversity of birds	---	43%	57%
Breeding sites	---	68%	32%
Nesting sites	5%	32%	63%
Number of predators	---	25%	75%

Some of these changes may be attributable to an improvement of the condition of the land. If plant diversity is truly improving like they say it is, then this may be providing additional types of browse forage attracting a variety of game animals. One manager had this comment:

We have been through seven years of drought, but our range still looks better than our neighbors. Because of this the white tail deer and elk numbers have really increased. They do take a significant amount of feed however.

Motivation to Continue HRM

One objective of this work was to detect levels of motivation to continue ranching this way. When asked this question, 95% indicated that they were not only motivated but that they were very motivated to continue managing holistically. Table 7.5 provides the distribution of their answers.

Table 7.5. Motivation level of respondents to continue managing holistically.

Motivation level	Value choice	Response Distribution
Very little motivation  Highest possible motivation	1	--
	2	--
	3	--
	4	2
	5	7
	6	17
	7	16

One producer had this to say:

We have made many mistakes on our journey with HRM and I expect we will make many more. We realize it is a process which continues to unfold and bring with it new challenges and triumphs. I have no regrets managing holistically and would never go back.

Another manager wrote:

I have learned more in the last 3 years than in the past 31. Holistic management should be taught to everyone at an early age. I now see only two management strategies; holistic and crisis.

The question then became, why was their motivation level so high? Their response became clear when they answered questions concerning goals. They were each asked:

1) Whether they are achieving their quality of life goals?

Eighty-five percent (85%) replied they are.

2) Whether they are achieving their production goals?

Eighty percent (80%) replied they are.

(3) Whether the land is evolving toward their goals?

One hundred percent (100%) answered yes.

What this indicates is that these ranchers want to continue managing holistically because their goals are being achieved. It does not say the goals have been achieved, but they are being approached. This appears to be an improvement from the past. One manager had this comment:

We have a long way to go still, but before HRM we just didn't know which way to go.

Another commented:

The advantage of HRM is that we have a happier and healthier work environment, and we are seeing our goals become a reality.

This seemed interesting as this researcher wondered, how many conventional ranchers would truly know their goals, or if they were ever achieved? Results from the survey group indicate they not only know where they want to go, they are heading in the right direction, as indicated by these comments:

HRM is not a system or method, but is an attitude and planning procedure. We have greatly changed the way we approach the management of this ranch. This has created a much more proactive approach to our planning and working toward long range goals.

Managing holistically has been gratifying to us. We feel better about our stewardship of the land.

Most of these people seem truly committed to the concepts of this approach. A comment from one rancher:

Managing holistically requires lots of faith in what you believe is right. I am seeing success in managing my knapweed problem with HRM, but it still requires a belief in what you are doing. Each year I am seeing proof that HRM is working and will contribute to the sustainability of this place.

There were those that found log jams with this method as well. This comment elaborates:

You need to spend fairly big bucks up front before seeing results. It is extremely difficult to get a team together, get them motivated for change, and get started.

There are others who consider HRM one tool of many in their management "tool box". This person commented:

Holism taken in moderation cannot hurt anyone. HRM is an excellent approach to resource management, but not the only approach. For example, I think Stan Parsons approach is as good. Some of the more successful practitioners I know and are much publicized in the HRM newsletter, take holism and the model with a grain of salt, but are still trying to learn as much from Savory and other managers as possible. The network of people within the center is invaluable and powerful.

There was one rancher who considered holism and HRM quite differently:

I don't buy into the idea that to manage holistically one must follow the prescription set forth by the Center for HRM. Holism is the idea that the universe is made up of fundamental individual wholes which are set forth with a certain amount of self determination depending upon the complexity of the whole. This "all-is-oneism" and "great collaborationism" the Center for HRM has adopted is far removed from holism.

Most Important Management Problems

Identification of management problem areas within HRM will show where implementation of HRM can be improved.

Respondents were asked to choose their three biggest management problems from a list (Table 7.6).

Table 7.6. Most important management problems of respondents.

Problem Area	Frequency of Response
Monitoring	18%
Time	14%
Water	11%
Communication	11%
Money	9%
Marketing	8%
Employees	5%
Family	5%

Monitoring Still A Weak Link

The method developed by the Center for Holistic Resource Management is one of the more usable and accurate techniques available for today's land manager. However, even this method can be difficult, and the information produced will not always provide clear management guidance. Even though almost two-thirds of these ranchers are documenting land condition, most of them still consider monitoring to be one of their biggest management problems. What follows are some comments about land monitoring:

The method we use to monitor range is tedious, time consuming, and really doesn't tell us a hell of a lot. But we have yet to see a method that is any better.

Our monitoring method has given us inconclusive and vague results.

I have monitoring data from the past 5 years stuffed in several folders. We do it because we ought to. I can see a change in some of the

numbers, but have little idea what they are telling me to do for my management.

Time

Obviously time is important for these ranchers. There never seems to be enough time to complete daily tasks and additional projects, while fulfilling personal commitments. Some of this may relate to the intensity of managing holistically and the difficulty of allowing time for quality of life. One comment pertains to this.

HRM requires a greater commitment to the operation. There is a trade off between stress and comfort, we are not achieving as much.

Water

Water is becoming a more precious commodity every day. With new demands from in-stream flow policies and an ever increasing demand for irrigation water, this indicates the lack of water may rank as a high concern for these people. In addition to this, lack of abundance and capacity of watering sources for livestock can be a concern due to the increased number of pastures and/or increased stock density these ranchers are using.

Communication

It can be frustrating to communicate the concept of HRM and foster support for its implementation. Of these 43

managers, 35% indicated they noticed difficulty with agency acceptance of HRM. The following comments pertain:

The BLM is very skeptical.

There has been a mixture of problems at the local and federal levels.

Our government managers generally seem to have problems with HRM.

Consultants

There were few comments about consultants, but several respondents indicated that the cost of consulting fees prohibited their use.

We need to get more education in HRM out into the communities. It needs to be made more affordable. The Center for HRM and most consultants have priced themselves out of the market for the average rancher/farmer. Their prices are outrageous for agriculture.

I wish I could afford an outside consultant to work with and help me get everyone more motivated for change.

Paradigm Shift

One of the biggest obstacles for farmers/ranchers to accept HRM, is how much of a total paradigm shift is required for this management. Almost all of their past management philosophy is in many ways challenged or reversed. This can best be illustrated by comparing some of the differences between traditional ranching paradigms and holistic paradigms (see Table 7.7).

Table 7.7 General comparison of traditional ranching paradigms with holistic paradigms.

Item/ Situation	Traditional Ranch Paradigm*	Holistic Paradigm
Goals	Owner has few if any written goals, but knows what he wants.	All involved help to create a written holistic goal including social, financial, and ecological aspects .
Planning meetings	Discuss what to do during a meal and get back to work.	Regular planning meetings discussing work issues, group progress and decisions.
Ecosystem	Know how it works but often don't understand it.	Realize ecosystem functions through the processes of water and mineral cycling, succession, and energy flow.
Climate	Take it however it comes.	Take it however it comes, but realize bio-decay rates dictate certain types of land management practices.
Wildlife	View livestock as primary source of income. Little if any management for wildlife.	Consider wildlife as part of entire resource which has value. Sell hunting and fishing rights. Manage for wildlife.
Tools	Any tool is available that can be purchased, fixed, or borrowed.	Look at the tools of fire, rest, living organisms, grazing, animal impact, and technology as functions of money, labor, and human creativity.
Decision making	Owner and possibly subordinate(s) discuss if tool is affordable. Owner decides.	Group use of decision model which tests for financial, ecological, and social soundness toward holistic goal. Model decides.
Financial planning	Look at last years books and compare. Monitor current checkbook balance.	Annual financial planning. Gross margin analysis testing. Marginal reaction testing. Weak link testing. Diversify enterprises. Planned profit.

* These are examples from personal experience as a fourth generation traditional rancher and living and working among other traditional ranchers.

Table 7.7 (continued) General comparison of traditional ranching paradigms with holistic paradigms.

Item/ Situation	Traditional Ranch Paradigm*	Holistic Paradigm
Grazing planning	Put stock in pastures about the same time as always. Maybe defer season of use on some.	Create a written grazing plan calculating forage production and quality. Meshing biological factors with plant growth cycles. Adjust grazing "on the go" through time management
Monitoring	Observe how the pastures compare to what memory provides	Use a formal land monitoring method on selected areas of the ranch. Measure indicators for ecosystem process well-being.
Weed infestation	Spray if can afford time and money.	Decide if they are really non-desirable. Search for cause of weeds-question grazing management. Possibly spray if passes testing of model.
Poor pasture condition	Talk with the SCS Maybe rest it. Spray or burn it. Consider re-seeding. Graze it as usual.	Establish future land goal. Monitor/assess land condition. Search for and address cause of poor condition. Question grazing management. Test for other tools to use from model.
Eroded stream banks	Do nothing & hope no one sees the stream. Haul and use rocks to protect and stabilize erosion. Maybe plant willows.	Look for and address cause of erosion. Question and/or adjust grazing management. Possibly armor stream banks if pass testing guidelines in model.
Cold and sick young calves at calving	Treat with medicine put up more windbreaks and continue calving in sheds	Question cause of their sickness. Don't calve when it is cold. Don't calve in a disease rich environment
High feed bill	Pay it	Match livestock nutrient needs to availability of forage. Use supplemental forage when necessary.
Profit	It is a goal, and if the prices would just get better, profit is possible. Maybe Emus?	Profit is planned during annual planning. Annual budget starts with profit already removed.

* These are examples from personal experience as a fourth generation traditional rancher and living and working among other traditional ranchers.

These two pages of tables should provide a reasonable understanding of the differences that exist between both methods of management. What should be noticed is that traditional management is more "seat of the pants" type management and "quick fix" oriented. HRM is a process, based on using a decision model, business strategies and the concept of holism to effectively manage resources, for a profit.

There are ranchers who will argue that traditional methods have worked "just fine" on their place. And in some ways these practices have "worked", they address problems with solutions that provide accelerated results. The outcomes satisfy the rancher and shows that he is a watchful land steward and stockman. Unfortunately, these results are often short-lived and may turn into problems later. But this is what is expected in ranch life, continually reacting to problems and situations of this type. Some would refer to this as "crisis" management.

Traditional ranchers are now being asked to turn all of this thinking upside down and manage for the long term, to plan their grazing, to look at cause and effect, to question why they calve in January and February, to think about ecosystem processes, and to plan finances rigorously. It is an incredible paradigm shift to move from one to the other, for

there is a great deal of education required to understand and actually apply HRM.

Understanding HRM

One of the biggest hurdles a conventional manager must clear when changing to a holistic approach is to understand the process of HRM. The fundamental ecological and financial theories alone, can be overwhelming for many. Couple that with the human aspects that are addressed (e.g., trust and acceptance, open communication, collaborative decision making, sharing personal goals), and this is a "bill of goods" that is even more difficult to swallow. Even though this research collected information from persons that are (theoretically) firmly committed to HRM, many of these individuals seem to still not have a clear understanding of, or adhere to all of the aspects of HRM. This is primarily because the concepts are so foreign to them. This is reflected in some of the following comments:

I have a faulty understanding of the principles and the model is too confusing.

My father generally has the last word and he doesn't understand HRM nor does he want to.

I often wonder if I am doing the "right thing" with the land, people, and place. As there are no measuring sticks, one just has to trust the 'feeling' of progress or not.

The biggest drawback of HRM is the process of understanding it

I still have a hard time swallowing HRM in its entirety.

CHAPTER 8

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

This research is an initial effort to explore a relatively new, alternative approach for land managers involved with ranching. The focus is to describe what management changes have taken place, and to evaluate if the results of these changes are beneficial to users. This work set out to answer four research questions:

1) Does adoption and implementation of HRM lead to positive or negative change in happiness for these ranchers; and what kinds of change are there, if any? The results indicate there has been a positive change in satisfaction levels for family and personal happiness, vacation time, job pleasure, and community involvement. Moreover, the majority of these people feel they are attaining the quality of life goals they have set.

2) Does the adoption and implementation of HRM influence the financial satisfaction for these ranchers, and if so,

how? Results indicate almost all of these people show increased economic satisfaction and are making more profit. Furthermore most of these individuals feel they are achieving the production goals they have set.

3) What kind of ecological change, if any, is occurring on these ranch lands since adopting and implementing HRM? Results indicate there is change, and almost all of the changes are positive. These managers have noted increased seedling success, plant diversity, litter cover and water infiltration into the soil. They also report decreased soil erosion and soil surface crusting. Furthermore, they report increased numbers and diversity of wildlife. Without exception, they all believe the land is evolving toward the goals they have established for the ranch.

4) What are the current motivational levels, for these ranchers, to continue implementing HRM? Results from this work indicate all of them are motivated, and most of them are highly motivated to continue HRM since the goals they have set are becoming a reality.

HRM is a process of thinking and decision making, and a management method employing principles and strategies based on established future goals. These strategies are geared to address four integral components of resource

management: people, financial resources, living organisms, and the land.

HRM has several facets. One of its applications is a thought model which takes a systems approach to decision making and strategic planning. This model is designed to help the user forecast the outcome of certain actions. It is used as a guide to aid in the decision making process.

HRM gives managers a framework for operating a business. It might be compared to a template, which provides guidance in business planning, decision making, human relations, and overall ecosystem management.

HRM requires a high level of commitment. What separates these holistic managers from traditional managers is the requirement to establish goals for themselves and the land. They must be committed to achieving these goals. Many of these ranchers appear to have the attitude that their business cannot fail...one way or another, it will work. This commitment, probably more than anything, has contributed to the success of their ranches.

HRM requires time in front of a desk with pencil in hand, setting goals, planning finances and a future for the land. It is devising strategies and grazing schemes, delegating jobs, creating incentives, and always looking for the

weakness in the business. HRM is not an easy way to manage, but it can be an effective method of managing.

HRM is people intensive. It requires engaging in activities to build the trust and acceptance necessary for candid, open communication. It also requires individuals to surrender their "egos" and "control" to the greater management whole.

For this group of participants, ranching is no longer viewed as simply "a way of life", it has become a business first, centered around "a way of life". The approach of HRM has helped them plan toward achieving their future; it has improved their happiness; their finances and their land.

The process of HRM may not be the final answer, but it is a harbinger to a new awareness and approach for agriculture and resource management. People in these arenas have many concerns, and have few long term solutions.

Growth of HRM

HRM has experienced a seemingly slow rate of adoption when considering the concept of diffusion of innovation. Rogers et al. (1988) indicate that the rate of adoption is a function of the innovation's perceived degree of; relative advantage offered, compatibility with existing values and needs, observability of results, and simplicity and ease of use. It further must show trialability. Trialability is the

degree to which an innovation can be used or experimented with on a limited bases. An innovation that is trialable reduces the risk for the individual who is evaluating it.

This survey shows that, as an innovation, the adoption of HRM exhibits a high degree of relative advantage and observable change. It further demonstrates a high degree of compatibility with existing values and needs of these ranchers. However, the complex nature of the concept coupled with the management intensity required, make the adoption process more difficult. Furthermore, because of its holistic nature, HRM requires an "all or nothing" commitment. Unfortunately for those considering HRM, there is a paucity of "hard evidence" substantiating its claims of success. This necessitates a great deal of trust in the paradigm itself, thus increasing the individuals perceived factor of risk.

With this criteria in mind, it appears HRM is strongest in the areas of relative advantage, compatability, and observability, while it is weaker in simplicity and ease of use, and trialability. The marginal reaction test suggests that greatest progress can be made in adoption of HRM by developing methods to make it more easily understood and easier to use.

The Center for Holistic Resource Management has been in existence for 12 years and continues to grow and change. It no longer sponsors introductory classes, but serves as a conduit for training registered HRM educators and consultants. There are approximately 25 of these educators (five from universities) located in the US, Canada, and Mexico. Another 40 are just completing a two year educators program. There is also large growth of its use in Africa and Australia. Because HRM is an entire planning process, it surpasses just land management. Educators and consultants are seeing demand for its usefulness in the process of community and land planning in many areas of the US.

Recommendations

If this survey instrument is to be used again, there are some questions which should be reworded, clarified, or redirected. Additional requests would include: elaboration on specific livestock practices and weed control, computer use(if any), what frustrations are found with land monitoring, comments about employee turnover, what type of marketing approach is practiced, and in what capacity is the HRM model used in their decision making. Perhaps more beneficial, would be a follow-up study involving the same group,

including team members, to determine changes (if any) since the survey was administered in 1993.

Universities Addressing Managers Needs

This survey identified areas where managers need help regarding HRM. This should serve as an opportunity for universities and/or other professionals to focus some effort in such areas mentioned below.

- 1) Difficulty with monitoring. Methods must be developed which are meaningful and affordable for these people and others who want to monitor their land.
- 2) Lack of time. More simple and efficient ecological and financial planning methods should be explored. Perhaps a software program based on "expert systems thinking" which will walk users through the steps of goal setting, planning, budgeting, and decision making could be developed.
- 3) Water is a concern. Efforts should be placed on helping producers utilize their water resources more efficiently, providing ideas and methods for developing livestock watering sources.
- 4) Reasonably priced consultants/educators need to become more available for those that want and need help.
- 5) Adult teaching methods designed to enhance learning and understanding should serve as a conduit to facilitate the learning process.

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Personal Communications

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APPENDIX

Questionnaire

Holistic Management Questionnaire
Charley Orchard
Department of Plant and Soil Science
Montana State University
Bozeman, Montana 59717
February, 1993



Charley Orchard is a 4th generation cattle and horse rancher from the Big Horn Mountains of Wyoming. His current pursuit of a Masters Degree at MSU was stimulated from concerns experienced with his families ranch and a 5 year involvement with Conservation Districts at both County and State levels. His research is focused toward Sustainable Agricultural Management Practices.

Find enclosed within this questionnaire booklet, a 4 page reply sheet and a pre-addressed stamped envelope.

This questionnaire is designed to document the use and effects of Holistic Management on yourself and your farm/ranch. Approximately 40 holistic land managers in Montana, Wyoming, and Idaho are being given this questionnaire. With this information we hope to gain a further understanding and documentation of this resource management process.

Please answer all of the questions as honestly as possible.

If you are interested in the results, a space is provided at the end of the reply sheet.

Responses to the questions will remain confidential and will not be identified without your permission.

In this questionnaire, team members refer to any people directly involved with the business (other family members, employees, partners, etc).

INSTRUCTIONS:

Please record each response on the reply sheets. The questions consist of several yes-no responses, short written comments, and replies on a 1-7 scale. The test booklet is yours to keep, perhaps it can be used for future reference. When the questionnaire is completed please send only the reply sheets using the enclosed envelope.

Much of the questionnaire uses the following scale:

1=significant decrease		5=slight increase
2=moderate decrease	4=no change	6=moderate increase
3=slight decrease		7=significant increase

This questionnaire is broken into the following eleven sections:

- | | | |
|------------------|--------------------|--------------------|
| 1) Goals | 5) Monitoring | 9) Off farm inputs |
| 2) Communication | 6) Problem species | 10) Motivation |
| 3) Satisfaction | 7) Wildlife | 11) Background |
| 4) Financial | 8) Livestock | |

This questionnaire should require 1 to 1.5 hours to complete.

Thank you for taking the time to respond.

If you have any questions feel free to contact me at 406-585-8036 or at the address on the front of this booklet.

For recording ease, place reply sheet next to questionnaire and fill in response at that time.

SECTION 1(Goals and Planning)

(Please answer each of the following, yes or no)

- 1) Do you have any sort of written document listing the people involved in your business?
- 2) Do you have any sort of written document listing the resources (money, equipment, labor, land, etc.) available for your business?
- 3) Do you have any sort of written document describing the land involved with the business?
- 4) Do you have a written document listing your business goals?

If you do have a written goal:

- a) Does it include statements on quality of life?
 - b) Does it include a production section?
 - c) Does it include a future landscape description?
 - d) Does it include your neighbors and/or community?
- 5) How often do you and your team review your goals?
a) annually b) seldom c) never
 - 6) Do you plan on paper a yearly strategy for grazing, based on knowledge of plant growth cycles and other biological factors?
 - 7) Do you follow a yearly financial plan?
 - 7a) Do you have a written financial plan?
 - 8) Has this business completed any estate planning?
 - 9) Have you or members of your team participated in any structured leadership development/team building training?
 - 10) Which of the following areas (if any) do you consistently monitor(1-2 times/year).
a) quality of life b) financial c) biological
d) We do not consistently monitor any of these areas.

SECTION 2 (Communication)

(This section has several types of responses)

- 11) How often do you and your team formally meet to discuss work issues, the group's progress, problems, etc?
a) weekly b) monthly c) several times a year d) seldom e) never
- 12) Are family members of the whole team ever encouraged to participate in the meetings?
- 13) When the team does meet do they share in the responsibility of facilitating the meetings?
- 14) Are you considered the team leader?
- 15) Does the team leader know in general the areas of improvement and personal growth that each team member is seeking?
- 16) Among members of your organization, the feeling of trust and acceptance is. Low High
1 2 3 4 5
- 17) Your team solves problems in a cooperative manner. Little cooperation Much Cooperation
1 2 3 4 5
- 18) The team is allowed flexibility to find and implement creative approaches to the goals. Little Flexibility Much Flexibility
1 2 3 4 5
- 19) Your current management strategy is effective in meeting your groups goals. Ineffective Very Effective
1 2 3 4 5
- 20) The team leader is able to admit to the team when he/she has made a mistake.
a) always tries to b) sometimes c) seldom d) never
- 21) The team members admit to making mistakes.
a) try to always b) sometimes c) seldom d) never

SECTION 3 (Satisfaction)

- 22) How has your satisfaction level in the following areas changed since you started to manage holistically?

Answers are based on a scale from 1 to 7.

1=significant decrease		5=slight increase
2=moderate decrease	4=no change	6=moderate increase
3=slight decrease		7=significant increase

- | | |
|--------------------------|--|
| a) Family Happiness | f) Support From Neighbors |
| b) Vacation Time | g) Employee Turnover |
| c) Job Pleasure | h) Changes In The Land
Toward Goals |
| d) Economic Satisfaction | i) Personal Happiness |
| e) Community Involvement | j) Children Returning To
The Business |
- 23) Do you and/or your team ever take 1-2 days off (on a regular basis) throughout the month?
- a) If yes: During a typical month, approximately how many times would you take off 1-2 days?
- a) once per month b) two times per month c) three times per month
d) four times per month
- 24) Before managing holistically did you and/or your team:
- (choose one letter for reply sheet)
- a) take off more time from work than now
b) take off the same amount of time from work as now
c) take off less time from work than now
- 25) Do you and/or your family take a regular vacation away from the business?
- a) if yes, approximately how many days?
- 26) Are permanent employees given regular/annual vacation time?
- a) if yes, approximately how many days?
- 27) Do you supply housing for employees?
- if yes:
- a) Do you allow them to update farm/ranch housing (within bounds) to their personal preferences?
- 28) Are team members ever sent to schools/seminars/short courses for the business?
- 29) Are there any production incentives for employees?
- If yes please describe:
- 30) Are spouses of team members ever employed by the business?

SECTION 4 (Financial)

31) Choose all of the revenue generating enterprises which contribute income to your farm/ranch.

- a) cattle b) sheep c) goats d) horses e) swine f) fish
 g) wildlife h) row crops i) hay j) outfitting k) timber
 l) off farm job
 m) other(s) _____

32) Have you added any business enterprises (such as from the list above) since starting to manage holistically?

a) if yes: What have you added?.

33) Have you eliminated any business enterprises since starting to manage holistically?

a) if yes: What have you eliminated?

34) Have any expenses increased since managing holistically?

a) If yes: what expenses have increased?

b) What percent of overall expenses does this amount to?

35) Have any expenses decreased since managing holistically?

a) if yes: What expenses have decreased?

b) What percent of overall expenses does this amount to?

36) Y N Are you making more profit since using Holistic management?

a) if yes:

Estimate the percent increase in profit since starting to manage holistically.

b) if no:

Estimate the percent decrease in profit since starting to manage holistically. (if no change put 0)

c) Did your farm/ranch make a net profit in 1992?

37) What are your business' most important management problems? (choose up to three)

- a) employees b) family c) money d) technology
 e) water f) land g) animal performance h) time
 i) marketing j) monitoring k) communication l) knowledge
 m) crop performance
 n) other _____

SECTION 5 (Monitoring)

38) Do you or any of your team formally monitor and document changes in the land (such as plant production, litter cover, seedling success, amount of bare soil, or plant diversity)?

39) Do you take photos of certain areas to compare over time?

If yes:

a) Would you be willing to share more specific information from these records or photos at another time?

40) How have the following items changed?

Again use the scale from 1 to 7.

1=significant decrease

2=moderate decrease

3=slight decrease

4=no change

5=slight increase

6=moderate increase

7=significant increase

a) yield per acre

b) spacing between plants

c) new seedling success

d) plant diversity

e) small animal diversity

f) small animal numbers

g) number of birds

h) diversity of birds

i) large wildlife diversity

j) large wildlife numbers

k) litter cover on the soil

l) water infiltration into the soil

m) flow of water in springs and creeks

n) care for riparian areas

o) soil erosion

p) amount of soil capping

q) number of predators

r) Which area(s) most pertain to the above answers.

a) range/forest

b) pasture

c) crops

41) Has your business ever used an outside consultant experienced with Holistic Management?

a) if yes: in what areas did they assist you?

(circle all that apply)

a) goal setting

b) biological planning and monitoring

c) financial planning

d) team building

e) land planning

SECTION 6 (Problem Species)

This section will identify how the use of Holistic Management has affected the undesirable populations of plants, animals, and insects on the land you manage.

Again use the scale from 1 to 7.

- | | | |
|------------------------|-------------|------------------------|
| 1=significant decrease | | 5=slight increase |
| 2=moderate decrease | 4=no change | 6=moderate increase |
| 3=slight decrease | | 7=significant increase |

42) What changes have you noticed in the following areas:

- | | |
|--|---------------------------------------|
| a) number of undesirable plants | d) time/money spent for their control |
| b) time/money spent for their control | e) number of undesirable insects |
| c) number of undesirable animals (rodents) | f) time/money spent for their control |

SECTION 7 (Wildlife)

43) Are wildlife an asset to your operation?

- a) yes b) no c) undecided

44) Y N Have you implemented any management practices for the wildlife on the land you manage?

if yes:

- a) would you give some examples?

45) What changes have you noticed in the following areas since starting to manage holistically?

Again use the scale from 1 to 7. (refer to scale at top of page)

- | | |
|--------------------------|------------------------|
| a) number of wildlife | d) nesting sites |
| b) diversity of wildlife | e) populations of fish |
| c) breeding sites | |

46) Are there any predators you do not want on the land?

If yes: What predators are undesirable for your operation?

SECTION 8 (Livestock)

If you are not using any livestock continue on to section 9. This section is only for those that are using livestock on their land.

Again use the scale from 1 to 7.

1=significant decrease

2=moderate decrease

3=slight decrease

4=no change

5=slight increase

6=moderate increase

7=significant increase

47) Since implementing Holistic Management how have the following areas changed?

a) production/animal

g) use of fly sprays/pour-ons

b) production/acre

h) diseases in general

c) conception rates

i) use of hormones/growth stimulants

d) sexually transmitted diseases

j) use of medicine for livestock

e) sire to dam ratio

k) time spent with animals

f) problems due to flies

l) stocking rate (total # of animals on total # of acres)

48) Have you used livestock to trample out any brush or undesirable plants, or heal gullies and/or eroding ground?

If yes:

a) Were the results positive?

49) Have you changed your stock density significantly (number of animals/pasture at any moment in time) since beginning to manage holistically?

a) If yes:

Has stock density? a) increased b) decreased

50) Are you grouping together any animals that you had not in the past?

If yes:

a) would you please give an example:

SECTION 9 (Off Farm Inputs)

Again use the scale from 1 to 7

- | | | |
|------------------------|-------------|------------------------|
| 1=significant decrease | | 5=slight increase |
| 2=moderate decrease | 4=no change | 6=moderate increase |
| 3=slight decrease | | 7=significant increase |

51) Since managing holistically, how have the following uses changed?

- | | |
|-----------------------|---------------------------------|
| a) use of fertilizers | c) use of insecticides |
| b) use of herbicides | d) use of manure for fertilizer |

If you are not raising crops go on to section 10

52) Are your crops primarily a monoculture?

53) Do you rotate your crops?

54) Do you use any summer fallow?

SECTION 10(Motivation)

55) On a 1 to 7 scale (1=very little and 7=very much), how motivated do you feel to manage holistically? _____

56) Are you achieving your quality of life goals?

57) Are you achieving your production goals?

58) Is the land evolving toward your goals?

59) What Holistic education have you had?

- | | | |
|---------------------------------------|-------------------------|--|
| a) HRM in Practice | b) Generating Wealth | c) Land Planning |
| d) Biological Planning and Monitoring | e) Families in Business | |
| f) Goal setting | g) Policy Analysis | h) Building Effective Organizations (leadership) |
| i) Other(s)_____ | | |

60) What are the drawbacks of using Holistic Management?

61) What are the advantages of using Holistic Management?

62) Have you had any difficulty using Holistic Management with government agencies who you are involved with?

SECTION 11(Background)

- 63) Would you classify your business as a:
a) farm b) ranch c) both
- 64) Is the land under your management:
a) 500 acres or less b) 500-2000 acres c) 2000-6000 acres
d) 6000-12,000 acres e) 12,000-25,000 acres f) 25,000-50,000 acres
g) more than 50,000 acres
- 64a) Please estimate the percent of your land which is deeded, private lease, state lease, and federal lease.
- 65) What were your approximate gross farm sales and receipts for 1992?
a) Less than \$25,000 b) \$25,000 to \$49,999 c) \$50,000 to \$99,999
d) \$100,000 to \$174,999 e) \$175,000 to \$249,999 f) \$250,000 to \$349,999 g) \$350,000 to \$500,000 h) Over \$500,000
- 66) What were your approximate gross farm expenses for 1992?
- 67) How many families are living on your farm/ranch?
- 68) How many people are living on your farm/ranch?
- 69) How many permanent hired people are employed with your farm/ranch?
- 70) How many people have an ownership interest with the farm/ranch?
- 71) What is your age?
a) 12-17 b) 18-25 c) 26-35 d) 36-45 e) 46-55 f) 56 or older
- 72) Are you:
a) male b) female
- 73) How many years have you been managing any land?
- 74) How many years have you been managing this land?
- 75) Has this land been managed by your family prior to you?
if yes: a) for how long?
- 76) How long have you been managing your farm/ranch holistically?
- 77) What is your name?
- 78) Are there any other comments you would like to make?

This is the end of the questionnaire!!! Thank you for taking the time to respond. Please mail the reply sheet as soon as possible.

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