

NEW FARMER CASE STUDIES

TRANSITIONING THE FARM: Northland Sheep Dairy

By Karl North

Introduction

This is a study of a farm that was exposed to Holistic Management in the early 1990s at an introductory presentation by Allan Savory. In 1995 one of the farmers (that would be me) organized a three-day course in Holistic Management taught by a Certified Educator.

Although a regularly returning summer intern and I attended the first course to be held in New York and were impressed with the holistic paradigm and decision-making framework, we never acquired the habit of using it. I see several reasons for this. Spouses of the two attendees were not as committed, not having attended the three-day course. A support group I organized from all the participants in the workshop did not last beyond a year. However, the four people (myself, wife, and the intern couple who had worked with us for three years and were considering staying on permanently) did jointly write a description of our farm whole and a holistic goal statement. This work helped the intern couple to see clearly that farming was not as high on their list of life priorities as they had thought, and led to their decision to end their three-year internship experience on the farm. Also the exposure in the course strengthened my holistic convictions already inspired by academic work in social anthropology and ecology, and the study and practice of organic farming. Our overall farm management aimed increasingly at designing a closed or at least low input integrated system, relying on healthy water and nutrient cycling and effective energy capture rather than outside inputs. We moved more confidently toward grass-based animal diets, developed more efficiency in producing manure compost to build soil, and refined our intensive grazing management to include shorter grazing periods and more forage diversity.

Later I attended other Holistic Management courses; I coordinated a working group of farmers and academics that studied and compared whole farm planning tools including Holistic Management; and I made introductory presentations on the subject to various groups: a year-long working group devoted to debating regional rural development priorities run by Cornell Extension, an organic farming conference, and recruitment meetings for Holistic Management courses. Thus I became very familiar with Holistic Management and absorbed its principles into my farm management thinking, but never formally used the decision making process on a regular basis.

At about the time I entered the Holistic Management Northeast Educator Training Program in 2001, we began the transition of the farm to new

managers, having searched for several years for a couple who wanted to farm and would continue to develop our farm in the direction we had set. I asked the new managers to look into Holistic Management and to write a holistic goal to help with the transition. Along with my wife, Jane, they joined the Holistic Management learning community of several farm families I created

as part of my educator training. For the first time, everyone working on the farm became conversant with this management framework. Also for the first time in this region, people newly introduced to Holistic Management could learn and draw inspiration from a farm in the area that had begun to use parts of this decision making framework. This case study draws mainly on the impact of the use of this framework in the last three years of transition to new management. Here is a description of the farm at the start of this period. It contains statements of goals of the farm influenced by exposure to Holistic Management but developed before we wrote a holistic goal:



Karl & Jane North continue to work with Maryrose & Donn to transition the management of Northland Sheep Dairy to these new farm managers.

Highlights of Northland Sheep Dairy - 1995

The design and development of our farm began with long-abandoned farmland without buildings in 1980, and today combines a number of features not often found together on organic farms.

A strong concern with energy efficiency is expressed not only in solar building design but in general farmstead layout.

An equally strong focus on resource self-sufficiency has led us to a dairy operation that aims to minimize off-farm inputs of fuel, fertilizer, feed, and machinery. Features of our system now becoming more widely adopted include seasonal grass-based dairying, intensive rotational grazing, animal breeding for hardy, 100% grass diet efficiency, the use of animal traction power where appropriate, and a shift in perspective to see the primary function of animals as soil builders. As such, grazing animals have come to represent for us the driving engine of a sustainable agriculture; consequently we pay close attention to every step of their carbon and other soil nutrient cycling function, from maximizing manure production per acre, to efficient aerobic composting.

Whole and Holistic Goal Development

When we began the transition to new managers, my wife Jane and I had written the following Whole Under Management and holistic goal for the farm and refined it over several years:

Whole Under Management: Northland Sheep Dairy

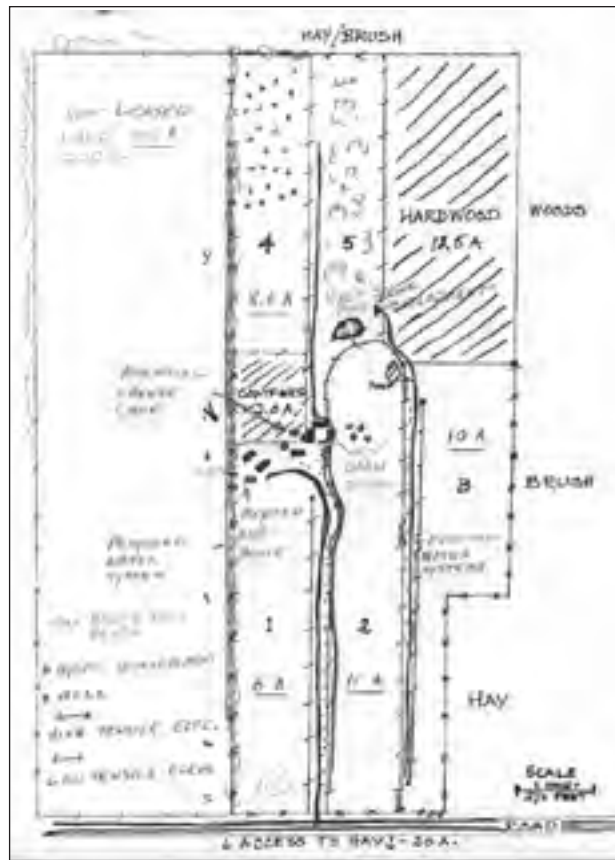
The Minimum Whole

People: Jane and Karl North,

Land/Capital assets:

- 1) 57 acres owned outright, including: 30A fenced for hay/pasture, 5A apple orchard, 125A hardwood forest including 36 ash harvestable now for lumber, 2A softwoods (currently logged out spruce and mature fence post cedar), 75A undeveloped brushy and woody pasture, 1A fertile gardens
- 2) 30 adjacent acres borrowed year-to-year: 20A clear hayfield, 10A rough brushy pasture.
- 3) 50 Dorset/Texel/Friesian dairy ewes, 6 Icelandic dairy ewes, 3 rams.
- 4) 2 Haflinger draft horses, two trained herd dogs: a Labrit and a Border Collie.

- 5) Machinery: 45 hp tractor, 30 hp tractor, horse and tractor hay equipment, pick-up truck, other machinery.
- 6) Buildings: passive solar farmhouse with attached greenhouse, 2 single story pole barns, 2 sheds, equipped farm shop, dairy/cheesemaking facility.



Northland Sheep Dairy Land Plan

Money: Income from sheep products, Income from savings, some health insurance, some savings usable as farm capital.

The Indirect Whole

People: Steve Strough, a neighbor who custom mows and round bales as needed, barter pigs for sheep, etc. Paula and Tom Machuts, who lend land, other neighbors who are potential lessors of adjacent farmland or collaborators on projects. Suppliers. Direct market clientele. Inspectors. Members and staff of professional associations and agencies devoted to land stewardship, who are sources of information and support. Children and relations. Friends far and wide.

Land: surrounding watershed, nearby state forest, Assets/Liabilities: local and global economy, Ithaca Farmers Market, local and national govt.

Money: Eventual social security payments.

A third emphasis from the outset has been to maximize independence from a wholesale agricultural marketplace that is generally predatory toward family farmers. Essential to the success of this effort to have been: our choice of sheep as the dairy animal with the most product diversity potential, our on-farm cheese-making aiming for artisan quality dairy products, and our involvement in building an attractive local farmers market in order to sell all our products (dairy, meat, yarn, sheepskins, and apple cider) direct to consumers in retail form.

Lastly we have always tried to manage the farm as an integrated whole, partly because as organic farmers we recognize such a complex whole to be the reality we must work with, but also because of the synergistic potential in looking at all parts of the enterprise as an integrated system. In an attempt to further wean ourselves from an academic agricultural paradigm largely based on isolated disciplines and piece-meal problem solving, we have taken formal training in Holistic Resource Management, a unique decision-making model that recognizes social and ecological concerns as crucial to ultimate success in any enterprise.

Northland Sheep Dairy Holistic Goal

Quality of Life

We want:

- 1) A minimum of economic and physical security
- 2) Affectionate, collaborative, stimulating, trusting, relationships
- 3) Fun and challenge
- 4) Political freedom
- 5) Environmental health
- 6) Egalitarian social justice
- 7) Cultural stimulation
- 8) Self respect
- 9) Life-long learning
- 10) Beauty and human scale

Forms of Production

We will produce:

- 1) Profit and enjoyment from dairy sheep and other livestock, other farm products.
- 2) Homestead production for a healthy degree of family self sufficiency.
- 3) Farming for collaboration, innovation and education: sharing the work,

and the knowledge gained.

- 4) Work that balances physical and intellectual, business and friendship, seasonal integration, stewardship and profit.
- 5) Marketing to enhance the local food economy.
- 6) Development that achieves an attractive harmony of function and form.
- 7) Civic and other political work toward an environmentally healthy, culturally creative, democratic/egalitarian civilization.

All forms of production will obey the following ecological imperatives, which are principles of management intended to insure sustainability, or permanent ecosystem health:

- Use holistic, site-specific designs
- Capture inter-species synergies
- Use local, current solar gain
- Respect nature's cycles: waste = food, etc.
- Design to appropriate scale

Our Future Landscape Description as part of our future resource base

- 1) Stable, living soils with at least 15% organic matter.
- 2) Optimum biodiversity appropriate to each type of land use: perennial forage, forest, hedgerow, orchard, gardens, eventual annual cropping for market, farmstead site.
- 3) A farm ecosystem that achieves a reasonable input self-sufficiency, particularly for feeding the soil community, plants, animals, and people in the minimum whole. This ecosystem will include:
 - Plant and animal genetics appropriate to this design.

- Enough open space for an effective grass/ruminant complex (described elsewhere).
- Hedgerows accessible in all paddocks.
- Efficient cycling to ensure ecosystem health
- Forest and other biomass production and solar capture to meet fuel, other energy, and compost material needs of the system.

- 4) Enough open space for production needs.
- 5) A conservation easement or other agreement that legally protects the farm from non-farm development.
- 6) Regional impact of the farm as a trend-setting model of sustainable design.
- 7) Younger managers taking over in time to maintain the farm.
- 8) A local community that remains largely rural, and becomes highly interactive and interdependent, economically, socially, and culturally.
- 9) A thriving regional economy, reasonably self-sufficient in food, energy, and shelter.
- 10) World peace via policies of economic security for all, replacing economic imperialism and other hegemonies and discriminations with democratic decision making.
- 11) A reputation with others that fosters progress toward the other parts of this goal.

I then asked the four decision makers to write an up to date Whole and joint Holistic Goal. As the document below shows, we have not yet written a joint Future Resource Base. This may have contributed to a conflict that arose over a major decision on the farm. I will describe testing of that decision later in the case study.

Northland Sheep Dairy - 2001

Joint Whole Under Management

Decision Makers

Karl and Jane North, Maryrose Livingston, and Donn Hewes

Resource Base

People: Cheese, meat, and fiber customers, Terry Perfetti (owner of adjacent rented farmland), owners of adjacent or nearby farmland, Dept. Of Agriculture and Markets

Land/Resources:

57-acre farm currently owned by Jane and Karl North, including:

- 30 acres fenced and grazed
- 125 acres hardwood forest
- 2 acres softwood: recently logged spruce and mature cedar
- 7.5 acres in brushy, woods and pasture

the rest in gardens, lanes, hedgerows, and building sites

30 acres of adjacent land borrowed year-to-year including 20 acres of hay field and 10 acres of brushy pasture

40 acres of hay/pasture on a 5-year lease from 2002

Livestock: 49 milking ewes of Texel, Dorset, Friesian breeding, 6 registered

Icelandic ewes, 4 rams including a registered Icelandic, 2 registered Haflinger geldings, 1 Percheron mare, 1 Percheron gelding, 1 Labrit herd dog, 1 registered Border Collie herd dog

Machinery: 45 hp tractor, 40 hp tractor, 32 hp tractor (for sale), baler, 3 horse-drawn mowers, 1 horse-drawn rake, 1 tractor rake, 2 brush hogs, 1 combine, 2 harrows, 1 ground drive manure spreader, 2 sleighs (one for sale), 2 hay wagons, 1 small trailer, 2 road inspected pickup trucks, one off-road pickup truck

Buildings and Equipment: farmhouse with attached greenhouse, office space, packing area, 6'x10' cheese aging room, cheese cooler and meat freezer; two equipment sheds with shop, freezers and coolers; sheep barn with 6-ewe milking parlor, 2-ewe milker, vacuum pump, and electric fence; milkhouse/cheesemaking room with 4'x10' walk-in cooler, 3 vats, 1 can cooler, 2 cheese presses; new livestock barn with 400 square ft insulated heated room in loft; hay barn with 90 round bale and 1700 square bale capacity

Money

J+K savings, farm income, J+K health insurance, Donn's off-farm income, D+M IRA and bond savings, student loan debt

Indirect whole (resource base)

2003 Financial Plan

A major challenge in 2003 was to increase profits from lamb sales, which would increase the number of available sheepskins for sale as well. This would require us to bring more lambs to market weight. By testing for the weak link in the lamb enterprise, we identified potential solutions: more barn space, leasing additional land, and different parasite controls. (See Decision Testing Section) We needed to make profits cover payments for labor to Maryrose, a new expense.

In the cheese-making enterprise we identified small vat size or product conversion as the weak link and the main obstacle to increased profits. This led to testing a decision to purchase a larger vat.

In the wool products enterprise the group identified the weak link as lack of diversity in the wool again a product conversion issue. A previous decision to invest in the Icelandic breed has potential to address this problem, but new products and markets for the higher quality Icelandic wool would have to be created.

In the sheepskin enterprise the weak link is insufficient skins for the demand, which would be addressed by bringing more lambs to market weight as



Northland Sheep Dairy workers harvesting sunlight.

mentioned above, and finding direct market customers for that meat.

We did a gross profit analysis comparing the enterprises which revealed how much more labor intensive the cheese making is than the others. We planned no immediate changes besides the increase in vat size, because cheese is our flagship enterprise, and, in terms of marketing power and visibility, leads all the others.

The planning process increased the confidence and sense of direction of the group. It is estimated that at year-end, lamb and cheese production will have increased significantly due to decisions taken in the financial planning process. The monthly monitoring component of the planning tool was not deemed necessary since the financial philosophy is to operate with no debt and with a reserve such that no cash flow problems arise during the year. No replanning was necessary during the annual planning period.

The Land Plan

The farmers found the principles of Holistic Management land planning helpful. But they agreed that an effective land plan for the farm would have to include more components than the Holistic Management land planning

People: Perfetti and Machut who loan or rent us land, Steve Strough who does some custom hay work, direct market clientele, NYS Ag & Mkts milk sanitation control, K+J's children René and Larisa, local farm community, farm agencies and organisations
Land: surrounding watershed and state forest
Money: Ithaca Farmers Market, future social security payments

Joint Holistic Goal

Quality of Life

We want:

- To incorporate young people
- Environmental health
- Rural living environment
- A community of like-minded people
- Fun and challenge
- Political freedom
- Cultural stimulation
- Beauty and human scale
- Self respect
- Low stress
- Collaboration
- Equality

- Space and time for creativity
- Livestock in daily life
- Pleasure from artisanal production
- Financial security: debt limited to a small portion of current income
- Physical security
- Opportunity for travel, education, teaching
- Balance of physical with intellectual life, business with friendship, work load through the seasons, stewardship with profit, and creativity with work

Forms of Production

- Profit and enjoyment from dairy sheep and other livestock and farm products
- Homestead production for a healthy degree of farm self-sufficiency
- Farming for collaboration, innovation, and education
- Production and marketing to serve and enhance a local food economy
- Build a simple, energy-efficient home with attractive harmony of function and form
- Political and civic work toward an environmentally healthy, culturally active, egalitarian civilization
- Stewardship and agreements to provide agricultural permanence on this farm
- Work for balance

Future Resource Base—Not defined jointly at this point

tool, which is only for livestock. The land plan process went through several versions as it began to take into account the long-term vision being created during the management transition. A point of departure was the three-year rotation to different fields of ewes, haying, and lamb flock, and the water, fencing, and other existing infrastructure that supported that plan (see grazing section of the case study). The latest land plan is a long term one that emerged through numerous planning meetings throughout the 2003 year. It is based on observations of response of all fields and lanes, especially the newly leased one, to grazing this year, to weather conditions, and to livestock impact. It takes into account infrastructure needs created by the land expansion and the planned expansion of the dairy enterprise, and the impact and needs of a second team of draft horses. Here is the most recent plan:

The Grazing Plan

The farmers embraced the principles of Holistic Management® Grazing Planning, but based on previous experience, decided that the initial and monthly calculations involved detail that was unnecessary in a nonbrittle environment at this scale of operation. We created plans based on extensive annual grazing histories (see below), including field notes taken during the grazing season for future reference. We have found that these records in conjunction with daily observation and adjustment allow us to dispense with extensive pre-season forage calculations for each paddock.

Our grazing plan aims to manage for the following:

- Short and long term overgrazing
- Field and livestock parasite loads
- Drought
- Unusually wet seasons
- Annual variations in pasture and hay quality
- Field production differences based on soil quality, stage of renovation of the forage salad, wet spots, slope and orientation
- Spring flush (using mechanical tools as well: haying, clipping)

Within a paddock we manage animals in production (dairy ewes in lactation and growing lambs) to provide the best quality forage. We can vary paddock size daily to change stock density as needed. If a flock moves too quickly through its cell, it is transferred to a reserve area. If it moves too slowly some of the cell may be hayed. Reserve areas are large enough to handle worst-case scenarios. Ungrazed reserve area forage is not wasted since it can be hayed, or stockpiled for grazing after growing season ends.

When new land was leased in 2002, we developed a more elaborate version of the three-year rotation and continued the habit of reliance on detailed records of grazing history. A sample of the grazing histories and the original three-year rotation appear below, followed by grazing plans for 2003 and 2004.

Decision Testing

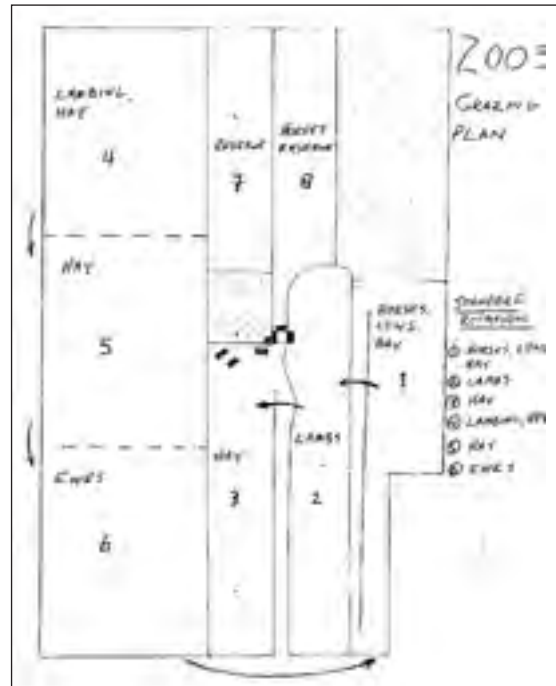
Three of the major decisions taken so far in the transition period relate directly or indirectly to one of the most intractable problems of sheep husbandry, control of internal parasites in a wet climate.

Decision #1

Here is how one of the other decision makers described the problem and the actions tested (edited only for readability).

“Internal parasites have been a concern on the farm for many years. We used chemical dewormers rarely as we wanted to practice genetic selection for parasite resistance. Worming sheep regularly will achieve just the opposite: a flock that is dependent on chemical wormers. This is not compatible with our stated goal of sustainability. The summer of 2002 saw a major increase in parasite related illness and mortality in our lamb flock. The causes were varied and difficult to ascertain. Some causes were specific to a given pasture and the weather of that year (cold, wet spring on poorly drained ground); others could have been nutritional, genetic (the ram used the previous winter) or an increasing parasite load over the whole farm. Wormers were eventually used in 2002 to maintain some of the lamb flock.

“The question for 2003 was, should we plan to worm any lambs preemptively? Two elements of the holistic goal relate directly to this decision. First, to raise a healthy lamb flock that provides a satisfactory source of market lambs. Second, to continue to select for parasite resistance in our permanent ewe flock.



Northland Sheep Dairy 2003 Grazing Plan

“We considered three options: 1) to worm all lambs at weaning, prior to moving to clean pasture; 2) give no wormer to the first group weaned (approximately 30 lambs), and worm all lambs after the first group; and 3) worm lambs only when signs of parasites persist.

“Using the testing questions we found:

1) **Cause and Effect—Does this action address the root cause of the problem Problem—lambs get parasite.** As worming does not address the root causes of this problem we want to use it in a way that will not make the problem worse. We also must seek other solutions that go to the root of the problem. Worming does not pass.

2) **Weak Link**

Social—Have I/we considered and/or addressed any confusion, anger, or opposition this action could create with people whose support I/we need in the near or distant future?

Our social weak link was tested greatly by this decision, as there were

differing points of view on how this decision would or would not lead to our holistic goal. We used discussion and compromise to overcome these obstacles. The solution had to feel right to everyone.

Biological—Does this action address the weakest point in the life cycle of this organism?

Worming didn't pass this either.

Financial—Doesn't apply

3) **Marginal Reaction**—Which action provides the greatest return, in terms of my/our holistic goal, for the time and money spent?

This test was very important in choosing between the three options. We had great reservations about using chemical wormers, so we first decided that to worm the whole lamb crop preemptively was counter to our long-term goals. We thought the benefits of worming two thirds of our lambs after weaning were: 1) we could use the first group as our genetic resource (i.e., select replacement rams and ewes which have grown and stayed healthy without wormer), while worming later lambs to reduce the parasite load brought from the lambing pasture; and 2) hopefully raise and sell a healthy market lamb group. Worming no lambs left us exposed to losses equal to 2002 and could eventually cut into our genetic resource. Going the middle road of worming some lambs passed.

4) **Gross Profit Analysis**

Does not apply.

5) **Energy/Money, Source & Use: Is the energy or money to be used in this action derived from the most appropriate source in terms of my/our holistic goal? Will the way in which the energy or money is to be used lead toward my/our holistic goal?**

Does not apply.

6) **Sustainability**—If I/we take this action, will it lead toward or away from the future resource base described in my/our holistic goal?

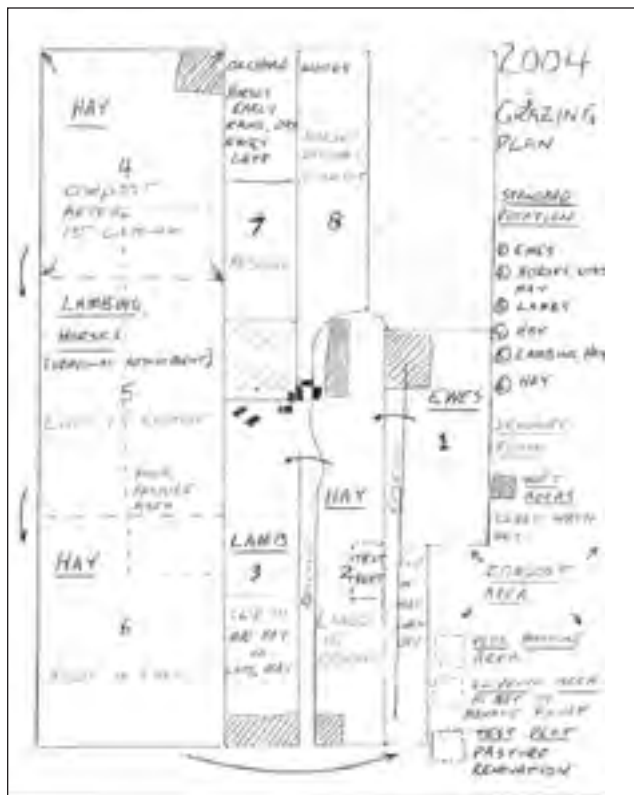
In order for this action to lead toward the desired future resource base it must be one component in a broader plan that will result in parasite management without wormers.

7) **Society & Culture**—Considering all the questions and my/our holistic goal, how do I/we feel about this action now?

The decision to worm some lambs was an acceptable compromise for the group.

“The final decision was to treat 65 percent of our lamb crop with wormer at

weaning time. Lambs also would be treated on an individual basis when signs of parasites persisted. Several new strategies are being employed to try to deal with this problem; new leased pasture will allow for a longer recovery period for lamb pastures; increasing lamb plane of nutrition with molasses immediately after weaning; and others. We believe that with these efforts our use of preventive wormer will be short lived.



Northland Sheep Dairy 2004 Grazing Plan

Monitoring

“We weighed our lamb crop five times in 2003. These weights were compared by rate of gain in each growing period between weighing. Also nine lambs were treated twice with wormer. Our lamb management has become more labor intensive and uses more inputs. We are monitoring these changes as part of the overall farm monitoring routine.

Results

“With less than a week to go before lambs start to leave for various markets it is safe to say that we have had a good year growing lambs. The weights are heavy and the replacement animals look great. There were several to choose from for each opening. For all we know our success this year could be the result of better weather and a portable shade shelter, but we are happy with the results. The real measure of success for this decision will be how soon we can stop

doing it; we are working hard toward that end.”

Educator Analysis

I have quoted at length the testing process as described by another decision-maker on the farm for several reasons. First it allows me as “educator” to draw back and comment on the achievements and weaknesses of the process. Second, the description provides a good background for a discussion of two important decisions that are closely connected to the parasite problem decision.

The description reveals a strong grasp of the testing questions and an understanding of the importance of the monitoring feedback loop in the Holistic Management® framework. Nevertheless, when the educator (me) repeatedly asked: “How does worming the majority of the lambs move the farm toward the farm’s desired future resource base?” it was difficult to overcome resistance to a discussion of the question, and to find even a common basis for dialogue. The obvious problem here is the failure of the group of four so far to achieve a written statement of their future resource base. Each couple had done so separately, but even these statements had not undergone the review and refinement necessary to make them useful tools in decision testing. Thus the part of the framework that could provide a common ground for the discussion was missing.

Decision #2

The conflict over worming vs. strong selection for parasite resistance became emotional and threatened the future of the partnership. The debate revealed further friction the collective decision-making process caused in the partnership. The new managers clearly preferred to be left to do their own trial and error management independently, particularly regarding livestock management. Since livestock management under K+J had been my responsibility, I considered a decision to prematurely relinquish my decision-making rights and responsibilities in this area to the rest of the group, which meant in practice to D+M.

Decision: Karl remove self from livestock management

1) Cause & Effect:

Problem=conflict over management. As the root cause of the conflict seemed to be my need to at least require a discussion of my views as long as I was responsible for the management, the decision addressed that by relieving me from certain responsibilities. But a deeper cause was the lack of an actionable joint future resource base statement, which I decided would take time to address and had to be put off in the short run in order to keep the partnership alive.

2) Social Weak Link:

The decision addressed the relevant weak link (social) by changing the nature of the partnership.

3) Marginal Reaction:

By clearing up the conflict, this decision would keep the farm moving toward a most important part of my goal - successful transition of the farm to the next generation.

4) Gross Profit Analysis:

Doesn't apply.

5) Energy/Money, Source & Use:

Doesn't apply.

6) Sustainability:

The decision did not in my mind pass the test of sustainability on one count, because I felt D+M's management style included a desire to maximize short run gain from lamb production that conflicted with their desire for progress toward animal genetics that would help provide a sustainable solution to the parasite and other livestock-related sustainability issues. But on another count it did pass the sustainability test because by removing an obstacle to the transition it would help ensure the survival of the farm.

7) Society & Culture:

This decision to back away from the livestock management so D+M could be

in charge felt like the right solution to help with the farm transition.

Decision #3

Another major decision we tested was the proposal to rent an additional 40 acres adjacent to the farm.

1) Cause & Effect:

Problem=insufficient farm income. Doesn't necessarily address the root cause, but may alleviate problem for short-term.

Problem=parasite control. Also doesn't necessarily address the root cause, but may alleviate problem for short-term.

Problem=long-term overgrazing. Same as above.

2) Financial Weak Link:

The proposal came out of annual financial planning. It dealt with the weak link in the financial chain, which was insufficient forage

production. The five-year financial plan that appears earlier in this study estimated that profits would increase over the period despite the costs of increasing the scale of production to the capacity of the rented land, so it passes.

Biological Weak Link:

By providing enough land to lengthen the three-year parasite management rotation to a five-year rotation, it appeared to deal with the weak link in the life cycle of the biological organism, the parasite's inability to survive beyond a certain time without

contact with the livestock host. Passes the test.

3) Marginal Reaction:

This decision passes because estimated profits in the long-term are higher with this additional land.

4) Gross Profit Analysis:

Doesn't apply.

5) Energy/Money, Source & Use:

The new managers figured the decision passed the source and use of wealth test since the capital could come from the off-farm job income and be used to generate farm income.

6) Sustainability:

Because many consequences of the land rental would not emerge for a number of years it was unclear whether the decision would pass the sustainability test. It depended on the timetable of increasing energy self-sufficiency on the farm.



Karl North operating Northland's compost spreader

7) *Society & Culture:*

The decision definitely passed this test because in renting the land from a neighbor we strengthened a relationship that had gone sour.

Summary

In my experience as a facilitator, an interesting pattern has been emerging as farmers struggle to learn Holistic Management, both on this farm and in my learning community of farmers. Repeatedly, as farmers have used the testing questions, a stumbling block has been an articulation of their future resource base that proves inadequate for use in the testing process, and in particular the sustainability test. This suggests the need for better teaching approaches and perhaps materials to help farmers get a deeper understanding of this part of the holistic goal, and a better appreciation of its function in decision making.

The emerging pattern of difficulty in application of the sustainability test was in part responsible for the decision of two of the farmers in this whole to describe and make trial use of a new monitoring tool that would measure progress of wholes toward sustainability. Since this effort is a product of the use of Holistic Management on this farm, it bears mention in this case study.

For quite a while I have felt the need for a monitoring tool that can track progress toward sustainability of a whole, not just its pieces, (soil quality, productivity, worker satisfaction, etc.) We found a tool used in Cuba that can be designed to monitor concerns that are implicit or expressed in the testing questions, and much more as necessary. It was inspired in part by our use of Holistic Management on our farm, and our discovery of a gap in monitoring that needed to be filled to help us think and manage more holistically. In principle it can be used on any whole, not just farms. The paper we wrote to introduce this tool and demonstrate its potential using our farm as an example is available online at <http://managingwholes.com/northmonitoring.htm>

Good thinking about sustainability and consequences of our decisions on the future resource base involves learning how behavior of wholes in the short-term and long-term are related. I have observed in this case and many others that this part of learning how wholes function is one of the most difficult. The study of the dynamics of complex system behavior has revealed *characteristics that are common to all complex systems*. One is that managing them for short-term gain often leads to long-term loss, and conversely, managing for long-term gain often requires short-term loss or sacrifice. The school of systems analysis has discovered a number of these archetypal behavioral responses to management that are universal to complex systems. Perhaps if Holistic Management education were to incorporate more of these, it would be more effective in helping farmers and others struggling to understand and manage the behavior of these 'organisms' we call wholes.

If we look at the impact of Holistic Management, we see the following results:

Decision/Process	Result
Treat some lambs for parasites	Decrease conflict ↓
Karl remove self from livestock management	Decrease conflict ↓
Holistic goal	Improve communication and facilitate farm transition ↑

Decision Testing Summary

Decision—	Pass	Fail	Not Applicable
How to treat lambs for parasites			
Cause & Effect		X	
Weak Link-Social	X		
-Biological		X	
-Financial			X
Marginal Reaction (Only worm lambs that need it)	X		
Gross Profit Analysis			X
Energy/Money Source & Use			X
Sustainability (acknowledged short-term solution)		X	
Society & Culture	X		
Outcome—Worm only lambs that get worms and cull for genetic attributes desired			

Decision—Karl remove self from livestock management	Pass	Fail	Not Applicable
Cause & Effect	X		
Weak Link-Social	X		
-Biological			
-Financial			
Marginal Reaction	X		
Gross Profit Analysis			X
Energy/Money Source & Use			X
Sustainability		X	
Society & Culture	X		
Outcome—Karl remove self from livestock management.			

Decision—Rent additional 40 acres	Pass	Fail	Not Applicable
Cause & Effect		X	
Weak Link-Social			X
-Biological	X		
-Financial	X		
Marginal Reaction	X		
Gross Profit Analysis			X
Energy/Money Source & Use	X		
Sustainability	?		
Society & Culture	X		
Outcome— Rent additional land.			