Integrated Dairy Farm Management

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Take Home Messages

- Small business owners are required to fill each of the three key roles necessary in any business: worker/technician, manager and leader/entrepreneur.
- Because many dairy producers are production oriented, they spend a majority of their time in the technician role, neglecting management and leadership roles. Technicians focus on tactical, or day-to-day plans, while managers and leaders are responsible for strategic, or more long-term planning.
- Transitioning to an emphasis on strategic planning is difficult, but can pay many dividends including improved quality-of-life, profitability and sustainability.
- Financial management can be a good place to start linking the business's strategic plan back to day-to-day production decisions.

Introduction

Consider this analogy from Stephen Covey's *The 7 Habits of Highly Effective People*. Envision a group of people cutting their way through the jungle with machetes. They're the workers – clearing out the undergrowth. The managers are behind them, sharpening their machetes, writing policy, and bringing in improved technology. The leader is the one who climbs the tallest tree, surveys the entire situation, and yells, "Wrong jungle!" But how do the busy, efficient workers and managers often respond? "Shut up! We're making progress!"

Another well-known small business consultant, Michael Gerber, contends in his book *The E-Myth Revisited,* that everybody who starts a business must fulfill three distinct roles: the technician, the manager and the entrepreneur. The technician is the doer and lives in the present. The manager is an organizer

and clings to the status quo. The entrepreneur is the visionary and the catalyst for change.

In the dairy business, you are both the technician (worker) and the manager every day. You do the work and organize what work gets done first. But you are an owner, too. By definition, this makes you an entrepreneur. In Webster's 1988 edition, an entrepreneur is defined simply as someone who runs a business at his own financial risk. However, when the worker is allowed to be in charge of the business, management and vision are relegated to afterthoughts – things that get in the way of "real work." Gerber indicates that businesses run by workers are businesses stuck in the beginning growth phase. "It's easy to spot a business in Infancy," he says, "the owner and the business are one and the same thing. If you removed the owner from an Infancy business, there would be no business left." This "Infancy business" is very well represented in the Michigan dairy industry, and I suspect it can be found commonly in western Canada's dairy industry, as well.

■ Integrated Dairy Farm Management

Integrated dairy farm management means nothing more than beginning to view your dairy farm as more than just the sum of its parts. It's a reminder to step back and be an entrepreneur for a moment – find a vision for your business. Then move ahead to the managerial work of implementing that vision. The rest of this paper will briefly outline some ways to get started implementing your vision. There are lots of other methods and resources out there – a sampling is outlined at the end. Shifting your view from a tactical, or day-to-day, orientation to a strategic one is difficult, but it can be very rewarding.

Figure 1 shows a schematic example of integrated dairy farm management. Each of the boxes has many other influences than those listed, but we'll start here. The four diamonds down the middle represent the core of traditional business planning, or, as Gerber terms it, a business's Strategic Objective. But the system must really start with you – the entrepreneur – in the right square of Figure 1. What is your vision for you? What is your primary aim? Without knowing the answer to this, little planning can be done for your business.

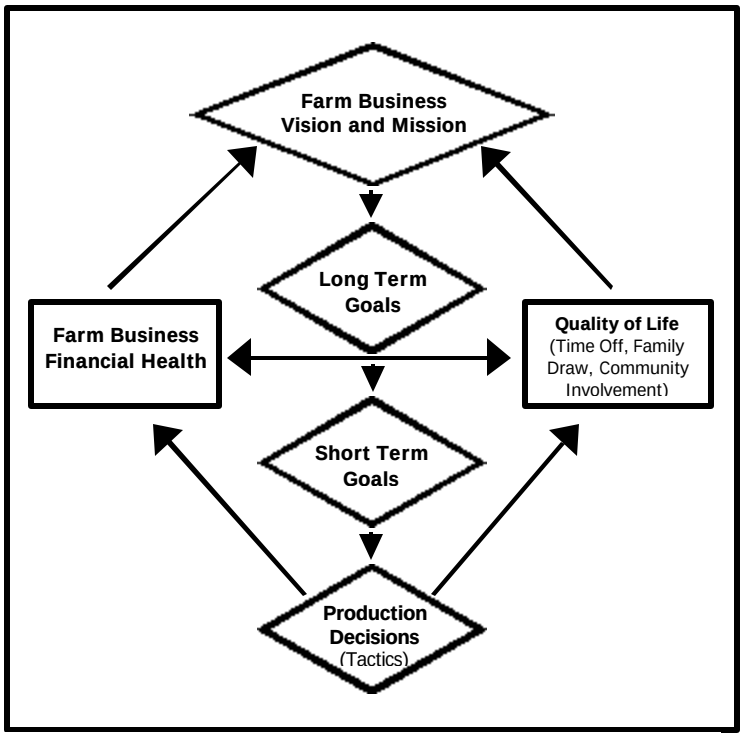

Figure 1. A schematic view of integrated dairy farm management.

■ Why Plan?

A common producer response to adversity is to pull the hat down a little tighter, get out there and work a little harder and a little longer. However, many producers are working as hard and as long as they can. They have already been cinching down the belt, trimming here and there to achieve that elusive "efficiency." Planning is the tool that allows the technician to both free the entrepreneur to be visionary and to harness the manager through development of systems. A good strategic plan should allow you to work smarter instead of just harder.

Planning forces you to anticipate problems and take steps to resolve them (White 1989). Wouldn't it be nice to know what equipment will be replaced in 2001 at the *beginning* of the year? Answering this question means you have done some serious data collection and analysis. You must have an inventory

of your equipment, its age and use. You must have projected farm income and expense for the year. Above all, it means you know where you want your farm business to be at the end of 2001 and also at the end of 2006. Equipment purchases are somewhat long-term decisions. But contrast knowing your projected annual equipment purchases to the common way in which these decisions are made. The 8 year-old, pull behind forage chopper breaks on June 15. Do we use the extra money in the checkbook to repair it (again) or is it used for a down payment on a bigger, better chopper? Or do we hire a custom harvester?

As a technician, you are faced with a seemingly endless "to-do" list and you must concentrate on the present. But as a proactive manager, it is your responsibility to look around and determine if you're laboring effectively. Are you using the best, most affordable technology? Are the most important tasks getting done? For example, are the maternity pens cleaned regularly, or has this job taken a back seat because you are too busy treating toxic mastitis cases? The second job is easily more urgent than bedding or cleaning pens. This simple example illustrates just how easy it can be to keep very busy while at the same time accomplishing very little.

Planning establishes a clear direction for both management and employees to follow (Anonymous). Many producers groan when they hear the words "mission statement." One slightly cleaned-up description is "a piece of paper on the wall that gathers dust." Indeed, plans need to be constantly reviewed and changed. General Eisenhower said, "The plan is nothing, planning is everything." If planning occurs regularly, the mission statement can serve as a powerful filter against which decisions, both large and small, can be gauged to determine the appropriate answer for your particular farm business.

Planning defines in measurable terms what is most important for the business and helps allocate resources like land, labor, machinery, and equipment efficiently (Anonymous). Part of planning includes setting goals for things like financial efficiency, vacation time, production parameters, or home-improvement. By setting these goals, managers have both created measures to allow monitoring of success and determined what issues are high priority and deserve additional resources.

Strategic Planning

Who am I?, What do I value most?, and Where do I want to go? Are some of the tough questions that need to be answered to successfully complete long-term planning. After these are answered, entrepreneurs must move on to questions about their business: What will your operation look like in 5 years? In 10 years? When are you going to retire? How are you going to retire? What is your break-even milk price? Do you need to expand to survive? Long-term planning often means taking on some tasks that many producers find

unpleasant. Working inside with records, communicating with family, asking tough questions and stepping back to look at the big picture can be scary.

Types of Planning. There are two main types of planning: strategic and tactical (Anonymous). Strategic planning is the big picture look. It describes the business's overall objectives and includes a mission statement, long term and short-term goals, and a tactical plan. The tactical plan, in contrast, is much more specific. It describes how your business will implement day-to-day operations to achieve its long-term goals and objectives. Tactical planning is something producers do every day, though they may not realize it. When you decide on the day's priority tasks during morning milking or the coffee break, you have created a tactical plan. A tactical plan is important, but focusing solely on this portion of planning can make it very easy to end up in the "wrong jungle."

Planning Steps

Personal Mission Statement or Primary Aim. Planning begins by outlining who you are and what you want your life to look like. Gerber and others urge people to envision what they would like their funeral eulogy to sound like. This is a somewhat dramatic analogy. However, taking hold of your life and directing its outcome is a dramatic step.

Business Vision and Mission. A business vision statement lays out exactly what your business must look like for you to achieve your primary aim. The mission, or value, statement indicates what it is your business stands for. It is a touchstone through which all major decisions should be filtered. An example of a farm mission statement is shown in Figure 2.

Cook Boys Dairy

Cook Boys Dairy is a family owned partnership and our mission is to strive to maximize profitability by thoughtful use of skilled employees, dairy production inputs, hard work, and innovative ideas.

We value spiritual growth, family time, and environmental stewardship.

As fifth generation farmers, we manage in a manner that will allow opportunities for future generations.

Figure 2. A mission statement designed by a mid-Michigan dairy farm.

Long- and Short-term Goals. Long-term goals are the first steps toward accomplishing your vision of your business. They should be achievable within 2-5 years and meet the following requirements, outlined by the **DRIVE** acronym. They should be: **D**irectional and move you toward the objectives of your mission statement; **R**easonable – practical and obtainable, not extreme; **I**nspiring, challenging, and affect you positively; **V**isible – able to measure, easy to visualize; and **E**ventual – they will be fulfilled in the future.

An example from Michigan State University Extension's Farm Management team is: *To improve strategic management skills of people in farming and agriculturally related businesses by increasing their financial management abilities.*

Short-term goals are aligned in support of long-term goals. They should be achievable over the next 12 months and follow the **SMART** acronym. They should be: **S**pecific – designed to obtain a particular, detailed result; **M**easurable – there must be a way to determine that the goal was achieved; **A**ttainable – economically and physically doable; **R**ewarding; and **T**imed. Short-term goals must have a deadline.

An example from MSU Extension's Farm Management team is: *Through April 2001, seven Farm Financial Performance workshops will be held across Michigan. At least one will be held in each of the six Extension regions. Workshops will draw from 3 to 10 participants at each site.*

Tactics. Tactics are the list and prioritization of daily activities orchestrated to accomplish short-term goals. They are where most of us spend most of our time. A to-do list is a type of tactical plan. This is where all the work gets done – where the rubber meets the road. There is nothing wrong with the technician's work. The problems come when day-to-day work is not aligned to accomplish any higher purpose than to survive today. When tactics rule the business, the status quo is maintained, but goals are rarely reached – see Figure 3.

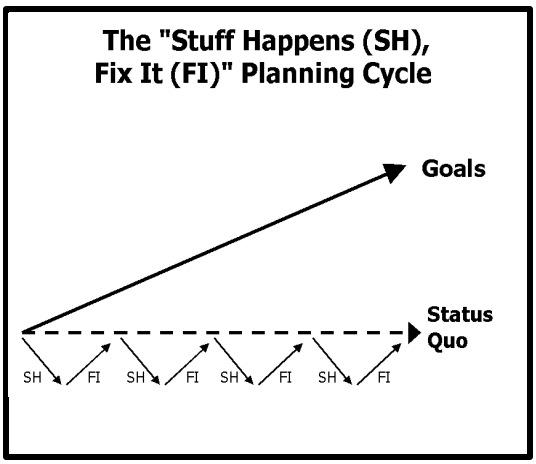

Figure 3. An example of how the status quo is maintained if planning is not conducted.

Transitioning from a Tactical to a Strategic Mindset

Making a commitment to evaluate your mode of operations means stopping and thinking about what your primary aim is and then aligning your daily tasks with these goals. As you might guess, this can be very easily said, but much more difficult to do. Here are some ways to begin.

Start small. Set aside one regularly scheduled hour with no disturbances to plan the upcoming week. If possible, plan the week in conjunction with relevant managers or family members. It is key that this hour is a high priority both to you and those involved. If you miss a few planning sessions or ignore the outcomes, your family and employees will follow your example.

List what is going to come up in the next week. Be sure to include all facets of your life: farm, family, social, community, and others. Anticipate bottlenecks and crises. For example, could you run short of feed, labor, or supplies?

Prioritize the tasks. This will help you stay focused on the important, not the urgent. An example of an action planning form can be found in Figure 4.

ACTION PLAN			
Strategic Objective/Long Term Goal/Short Term Goal			**Today's Date**
Leader(s)			**Projected Completion Date**
Specific Goals (How will you know that this objective has been accomplished?)			
Who is responsible for determining when this goal has been met?			
STEPS	**Responsibility**		**DUE DATE**
	To Act	**To Check**	

Figure 3. An example of an action planning form.

Delegate!! If you have other people that help you on the dairy, you will never move beyond reactive unless you are able to trust them with some of the tasks that you regularly do.

Set goals. After a month or two of these weekly meetings, it may be easier for you to formulate goals. Some may be short-term and could be accomplished over the next few months. Others may be longer-term. If you have been able to involve key family members and employees, you may be surprised to learn about their priorities.

Get help! There are a lot of resources out there that understand you and your dairy farm. Use the ones that you trust to help you decide which tasks are important. Resources include your veterinarian, nutritionist, cooperative representative, Extension agent, and others.

■ Now, Translate Strategic Plans to Tactical Plans

If you have accomplished the steps laid out above, you have begun to create an "umbrella plan" for your business. A plan that spans your entire operation and lays out a bold vision of your future. How do you get from this broad, future-oriented vision back to day-to-day operations?

Accomplishing your plan will require the coordination of many different "departments" within a business. A traditional organizational chart generally can include departments of Research and Development, Manufacturing/Operations, Purchasing, Personnel/Human Resources, Public Relations, Sales/Marketing, Finance/Legal. Integrated dairy farm management implies that your strategic plan is translated through each department on your dairy into your tactical, or day-to-day actions.

Each of these departments represents an important view of your farm. However, this paper will focus on the Finance department. In some ways, financial management does represent the viability of the whole operation – that is why it holds a key position in the left square in Figure 1. In addition, it may be one of the most difficult areas in which to link strategic and tactical plans. For example, how does the age at first calving of heifers affect return on assets? What will timed breeding do to profitability?

■ Linking Financial Ratios to Production Decisions

Despite a growing recognition by dairy producers and their consultants of the importance of financial statements and their analysis, only some employ these tools on a regular basis. In an effort to make financial analysis accessible for both dairy producers and their consultants, a simple summary of production and financial measures has been designed. The output of financial analysis software can be lengthy. While this output is thorough and necessary as supporting documentation, it can lead to "analysis paralysis." Besides limiting the volume of output, this summary also reorders the output to better relate the financial analysis to production management. Finally, the summary includes previous years' analyses to facilitate trend evaluation. Figure 5 provides the layout of the summary along with standard calculations and, where available, guidelines for each measure. The calculation of each ratio follows guidelines recommended by the Farm Financial Standards Council.

Business Analysis Summary Calculations

Productivity

		Guideline
Milk Sold per Cow	Milk Sold ÷ Average Cow Inventory	
Total Milk Sold	From records	
Milk Price	Milk Revenue ÷ Milk Sold	
Average Cow Inventory	(Beginning Cow Inventory + Ending Cow Inventory) ÷ 2	

Profitability and Net Worth

		Guideline
Net Farm Income	Gross Cash Farm Income - Cash Farm Expenses - Inventory Changes - Calculated Depreciation	
Net Farm Income per Cow	Net Farm Income ÷ Average Cow Inventory	
Return on Assets	(Net Farm Income + Interest - Value of Operator's Labor and Management[a]) ÷ Average Total Assets	
Return on Equity	(Net Farm Income - Value of Operator's Labor and Management[a]) ÷ Average Total Equity	
Average Net Worth	(Beginning Net Worth + Ending Net Worth) ÷ 2	

Asset Efficiency		**Guideline**
Asset Turnover	Gross Cash Farm Income ÷ Average Total Assets	40-60%
Total Assets	(Beginning Assets + Ending Assets) ÷ 2	

Operating Efficiency		**Guideline**
Net Farm Income Percent	Net Farm Income ÷ Gross Cash Farm Income	>15%
Operating Expense Ratio	(Total farm operating expense – interest expense) ÷ Gross farm income	

Labor Efficiency		**Guideline**
Liters per FTE[b]	Liters Milk Sold ÷ Full Time Employees	>750,000
Total Labor Hours	From Farm Records	

Liquidity and Solvency		**Guideline**
Current Ratio	Current Assets ÷ Current Liabilities	>2.0
Debt/Asset	Average Total Liabilities ÷ Average Assets	40-65%
Total Debt	From Balance Sheet	

[a] Value of Operator's Labor and Management can be $ value times hours of unpaid labor, family draw, or other value.

Figure 5. Layout, calculations and guidelines for selected farm financial ratios.

Guidelines for and Analysis of Financial Ratios

Assessing financial ratios seems to reveal the competitive nature present in every human. "Is that good or bad?" and "How does that compare to other farm's numbers?" are the inevitable questions. For most ratios, the answer to the good or bad question is, "It depends." For those ratios that have anecdotally accepted ones, the guidelines are listed.

When solid guidelines are not available, it is common to compare farm performance to that of other, similar farms. This is commonly referred to as benchmarking. Benchmarking can be a good source of information and motivation. However, it can be over used. If the records are available, it is often more useful to compare a farm to its own past performance, rather than to the performance of peers. Careful attention should be to the makeup of the peer group and method of calculation if benchmarking is to be undertaken. Finally, the analysis of the ratios presented below assumes a basic working knowledge of financial statements and their analysis.

Productivity

The summary begins by assessing farm productivity – setting the stage for the rest of the financial analysis. The critical dairy production parameters of milk sold per cow, total milk sold, milk price, and average cow inventory (herd size) are detailed.

Profitability and Net Worth

The summary then moves on to profitability. Through several measures, this section determines whether the farm is making money. The most traditional way this is measured is through Net Farm Income (NFI) – a return to unpaid labor, management, and equity. Net farm income per cow is simply NFI divided by average cow inventory. This number facilitates comparisons between farms of different herd sizes and is a number commonly found in lay publications. Acceptable ranges for NFI and NFI per cow are dependent on what part of the world the analysis is done in.

Return on assets (ROA) and return on equity (ROE) are alternative ways to measure farm level profitability. These measures subtract a charge for the value of unpaid operator labor and management from NFI and add back interest (in the case of ROA), then are divided by total farm assets or equity, respectively. Acceptable ranges for ROA and ROE depend primarily on individual investors. At a minimum, farming should return rates better than a savings account or Certificate of Deposit at the local bank.

Finally annual net worth on both a market and cost basis are included. Some consider annual net worth growth the ultimate measure of profitability.

Farm level profitability is captured (or lost) through efficiencies gained in three main areas: asset use, operating, and labor use.

Asset Efficiency

Asset turnover (ATO) is the "purest" form of asset efficiency. While return on assets also may show how efficient the farm is at utilizing their asset base, it is complicated by the necessary subtraction of an arbitrarily determined value of unpaid operator labor and management. Asset turnover is determined only by gross revenue, affected most by the price and volume of milk sold, and by farm assets. If this value is determined to be lower than optimal (40-60% for United States dairies), it is because volume or price of milk was lower than optimal, or because too many assets generated the volume of milk sold.

Examination of ATO reveals only farm-level area efficiency. If this can be improved, it may be useful to break down the farm by enterprises, or even by assets, to determine which are farm profit centers. However, this measure helps link the level of profitability directly to management practices. Does the producer value having large, new machinery? Is a large parlor used for a small- or medium-sized herd? Does the farm have enterprises besides dairy that require a large asset base or that have recently faced low yields or prices? If there are big differences in the level of cost and market ATO, which farm assets cause the discrepancy? Answers to these questions often lead to more detailed analysis of available financial data. Finally in this section, the value of farm assets, on both a cost and market basis, is included to evaluate change across time.

Operating Efficiency

The net farm income ratio (NFI%) determines what percent of gross revenue the farm is retaining as profit. Again, this number represents a farm-level assessment of efficiency. If this number is low (less than 15% on United States dairies), further examination is required. The operating expense ratio, depreciation expense ratio, and interest expense ratio can then be examined to determine what area(s) are contributing to a low NFI%.

A high operating expense ratio indicates that one or more cash expenses are too high. Purchased feed and hired labor generally represents the largest cash cost for dairy farms and are the first areas to examine. If purchased feed is high, how does it compare to previous years? Is the increase a trend or a blip? Did concentrate prices rise? Did a poor forage year result in the purchase of hay or silage? Were expensive additives included? "High" purchased feed costs can be acceptable if they result in high milk production. How does hired labor cost compare to previous years? Is the increase a trend or a blip? Was a new practice, like timed breeding or 3x milking, instituted that resulted in more hired labor costs? Did the cost of hired labor in your area increase?

If the depreciation expense ratio is high, it indicates that the farm may have too many assets for the level of profit. Are asset levels (cost basis) higher than on peer farms? See other question in Profitability and Net Worth (page 8)

A high interest expense ratio signals that the amount or structure of debt is inappropriate for the level of revenue being generated. Again, this could reflect the milk production or price conditions of a particular year, or it could represent an ongoing problem.

Labor Efficiency

Liters of milk sold per full-time employee (FTE) provides a method for examining labor efficiency. This calculation does not control for differences in labor needs across different farm types. For example, within Michigan, some farms grow all the concentrates and forages for the cow herd while others buy some or all of their feed. Farms also vary greatly in the intensity of their heifer rearing enterprises. In addition, FTE is rarely defined. The author has defined an FTE as 2,805 hours per year (51 weeks per year * 55 hours per week). This parameter is a popular one in the lay press and can be useful if its limitations are kept in mind. Guidelines have been anecdotally reported and supported by the author's experience. Farms in the Northeast and Midwest sections of the United States that tend to grow all forages and rear their own heifers, should sell over 342,000 liters of milk per FTE. Farms in the Western US that purchase all feed and rear no heifers should sell over 456,000 liters of milk per FTE.

Total labor hours, both paid and unpaid are also included to evaluate change across time. If labor efficiency is determined to be low, often parlor efficiency should be the next area examined.

Sometimes, farms will be quite asset efficient and at the same time have low labor efficiency. This is often due to a classic labor-for-capital trade-off. The machinery and parlor (or stanchion barn) may be old or lacking in the newest technology. However, output is maintained by additional labor hours, often contributed by the operator or family. If the dairy producer is near the beginning or ending of their career, this trade-off may be a necessary transition to time of easier cash flow or exit from the business. However, if this trade-off is taking place during the middle of the dairy producer's career, it is incumbent upon the analyst to make at least cursory inquiries about quality of life. Financial analysis is only a portion of whole-farm planning. Maximizing profitability may not be the dairy producer's main goal.

Liquidity and Solvency

These values roughly measure the risk level that the farm can bear. The current ratio assesses liquidity, or the ability of the farm to meet short-term debt

obligations. US bankers frequently use this calculation, but because of the seasonality of current assets (feed inventories, primarily) on dairies, it usually has little meaning. Debt-to-asset levels, on both a cost and market basis, are presented. A higher value implies higher risk. The lower this ratio, the more room a business has to utilize borrowed funds. A generally acceptable range for United States dairies is 40-65%. As the ratio increases, interest expense becomes larger. This can lower profitability (NFI). In addition, the large payments incurred by the debt create a need for consistent and predictable cash flows. Higher debt levels means that the dairy may not be able to withstand a costly event such as decreased milk production from a disease outbreak or ration imbalance. Total debt is provided so the farm can track trends across years. Remember, financial management is only one "department" through which your strategic plan needs to be translated to daily actions.

■ Conclusions

Most producers understand how fast today's dairy industry is changing. Trying to make yesterday's methods work in tomorrow's climate simply will not allow your farm to survive. Challenge yourself to take off the technician's hat and allow your entrepreneur to create a vision for the future – yours and your farm's.

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Anonymous. (1999) Focus on Success: Strategies and Tactics. *In:* Doane's Agricultural Report. Volume 62, No. 2-1.

White, Gerald. (1989) Using strategic planning to formulate future business opportunities. Cornell Agricultural Economics Staff Paper 89-1. Cornell University, Ithaca, New York.

■ Planning Resources

Alberta Agriculture, Food, and Rural Development – Starting and Growing Your Business – Agriculture and Food.
http://www.agric.gov.ab.ca/food/process/new_business/index.html

The Entrepreneurship Institute of Canada. P.O.Box 40043, 75 King Street South, Waterloo, ON N2J 4V1, Canada. 1.800.665.4497.
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