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# *Your Dairy In Transition*

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## ***Your Farm and the Industry***

***Developed by  
Faculty and Staff***



**Cornell  
Cooperative  
Extension**



Workbooks in this series include:

- ✎ Your Farm and the Industry
- ✎ A Planning Process for Considering Dairy Farm Expansion
- ✎ Winding Down Your Farm Operation

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**Your Dairy in Transition...**

**Your Farm and the Industry**

**Cornell Cooperative Extension**

**Faculty and Staff**

**August 1994**

## **Your Dairy in Transition**

This series of workbooks have been developed to assist dairy farm operators with making decisions relative to the future of their farm businesses. An interdisciplinary group of Cornell Cooperative Extension faculty, specialists and agents worked together to develop these publications. The team that developed "Your farm and the Industry" include:

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## **Additional Your Dairy in Transition Workbooks**

**"A Planning Process for Considering Dairy Farm Expansion"**

**"Winding Down Your Farm Operation"**

# Your Dairy in Transition

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## Chapter 1. Dairy Farm Resource Analysis and Business Performance

The effective dairy farm manager has a realistic concept of the present, a perspective of the past, and an eye on the future of the industry as a whole. Many factors over which an individual has little or no control can effect the dairy industry. Individual family situations play important roles in shaping the future of the family owned and operated dairy farm business. For these reasons, farm managers who objectively evaluate their physical, financial, and human resources are in an advantageous position when making decisions. Evaluation of the present business from multiple perspectives can help develop consensus on opportunities for improvement by the entire management/employee team.

The *PEOPLE COMPONENT* of the business cannot and should not be set aside from the farm resource evaluation since owner and employee likes, dislikes, and specialized skills will play an extremely vital role in the success of any business venture or expansion. Recognizing that the present farm staff lack specific defined strengths is a pivotal strength in itself. Thereafter, follow through by identifying and arranging for training appropriate for the individual(s) involved is critical to the success of a training program. Recruiting effectively to complement present staff is one example. This may be recruiting for defined, direct employment to complement the present staff and/or may mean seeking the services of professional specialists for key planning and troubleshooting time periods.

A review of the total farm business, family considerations, and options for farm income via other sources (i.e., cash crops such as forages, dry hay, etc.) is in order if an effective evaluation, together with a look at past performance, is to be completed.

### Resource Evaluation

Resource evaluation should be perceived as a managerial, informational strength. In many instances knowledge is a strong leveraging resource in itself. Going outside the business and acquiring new knowledge and skills is a resource strategy.

This workbook is a framework from which you can build upon your strengths.

Worksheet 1-1 describes a representative list of many of the resources that contribute to the success of your business. There are many other resources that may be brought to bear in critical business decisions.

Plan to commit some serious time discussing with family members the future direction of the business and all of the resources that need to be considered or brought to bear. Worksheet 1-1 Dairy Farm Resource Analysis checklist will provide a framework for that discussion.



After serious consideration of all of these criteria, it is important to look seriously at areas of your business that need improving.

Take specific planning action which will address these managerial or employee training needs.

### Worksheet 1-1. Dairy Farm Resource Analysis Checklist

Rate the following resources in your farm situation using a rating scale of:

- 1 = Low (needs to attain new skills/develop the resource)
- 2 = Needs some improvement
- 3 = High levels of skill/resource quality presently available

Farm Score  
Rating Scale

**Soil Resources on the Home Farm:**

- Soil production potential and crop suitability (see soil relative yield capabilities) \_\_\_\_\_
- Animal acreage requirements (can crop production be balanced with cow needs) \_\_\_\_\_
- Future potential of purchasing good soil acreage \_\_\_\_\_
- Is the Conservation Plan up-to-date and reflect most recent production criteria \_\_\_\_\_

**Crop Production Needs:**

- Custom applicators and related crop needs \_\_\_\_\_
- Are soil resources available to rent, lease or purchase \_\_\_\_\_
- As an option can forage crop requirements be purchased \_\_\_\_\_
- Feed storage facilities and potential to update \_\_\_\_\_
- Length of growing season \_\_\_\_\_
- Nutrient Management and Manure Handling, storage facilities \_\_\_\_\_

**Labor, People and/or Labor Management:**

- Family labor and management skills \_\_\_\_\_
- Abilities to work with people \_\_\_\_\_
- Skilled labor availability \_\_\_\_\_

**Financial Management:**

- Availability of business analysis skills within your business or contracted (who will to do it) \_\_\_\_\_
- Borrowing capacity \_\_\_\_\_
- Financial equity and assets \_\_\_\_\_

- more on next page -

**Worksheet 1-1 Dairy Farm Resource Analysis Checklist - Continued -**

**Farm Score  
Rating Scale**

**Farm Facilities Review:**

- Present dairy facilities and future needs, labor efficiency \_\_\_\_\_
- Consideration for expansion if necessary \_\_\_\_\_
- Farmstead planning and growth \_\_\_\_\_
- Availability of housing for employees \_\_\_\_\_
- Liabilities, such as on-farm disposal site hazards and lender concerns \_\_\_\_\_
- Availability of electric service appropriate to your needs. \_\_\_\_\_
- Example might be 3-Phase capacity \_\_\_\_\_

**Proximity, Reliability and Accessibility of Agricultural Equipment Dealers  
Service Availability and Agricultural Professionals:**

- Potential for a farm shop and a key employee with skills \_\_\_\_\_
- Cooperative Extension, nutritionists, crop production specialists, veterinarians, feed mills, commodity buyers and sellers \_\_\_\_\_

**Urbanization and Environmental Concerns:** (Is this the place and location that will lend itself to your development plans?)

- Likelihood that new and established rural neighbors would bring about restrictive legislation \_\_\_\_\_
- Environmental regulations such as Town, State and Federal guidelines and requirements \_\_\_\_\_
- Manure storage facilities restrictions and nutrient planning requirements \_\_\_\_\_
- Proximity to population centers such as villages and cities \_\_\_\_\_

**Milk Marketing and Markets:**

- Do options available to your enterprise create a feeling of confidence and stability \_\_\_\_\_

**Knowledge of Factors Shaping the Dairy Industry:**

- Do you stay up with information sources on new practices or technologies which may be considered for implementation on your farm \_\_\_\_\_
- Are you involved or willing to be involved in your industries development \_\_\_\_\_
- Would you and your employees strive to stay current with dairy industry and its development \_\_\_\_\_

- more on next page -

**Worksheet 1-1. Dairy Farm Resource Analysis Checklist - Continued -**

	Farm Score Rating Scale
<b>Availability of Water and It's Quality:</b>	
Quantity and quality of water have been problems in the past. How does your location rate for new water requirements?	_____
Are there other options for water, if necessary, such as municipal water lines close?	_____
<b>Local building and modifications in the many municipalities vary widely. Have you satisfied the necessary construction codes and permits?</b>	
Identify up front what will be required for building permits including fees	_____
Contact your County, Town or Village building and codes officer for more details	_____
Contact the local Soil and Water Conservation District	_____
Discuss some of these issues with your lender since they can share insights	_____

**Performance Evaluation**

Knowing the past performance of the business can be an indicator of what changes may need to be made. If production and economic trends have been static in the past, then the potential for improving management and profitability needs to be evaluated.

Criteria used to evaluate the business progress have to provide information that shows there is a potential for growth or improvement in the future. These criteria should include factors that relate to growth in livestock numbers, increased milk production, labor efficiency, cost control, and other financial figures that show strong financial trends at the present time. Worksheet 1-2 should be used to calculate performance measures for your farm. If increased productivity and high profitability have already been achieved, then the business has a high potential for being successful in the future. If the results from production and financial trends are mixed, then more

information may be needed to determine which areas of the business need to be strengthened. If there are many areas in the business that need improvement, then expansion should not be done at this time. Improving the present situation should be a priority.

**Benchmarks for Your Farm Business**

To determine how your farm business performance measures up you need to look at the trend of performance for your farm and compare your farm's performance to that of others in the industry. In the Northeast, both Cornell University and the Farm Credit Bank of Springfield develop annual summaries of farm performance. The Cornell Dairy Farm Business Summary is published by the Department of Agricultural, Resource, and Managerial Economics at Cornell University. The Farm Credit Bank of Springfield publishes the Northeast Dairy Farm Summary. Completing worksheet 1-3 will help you to identify performance trends for your farm.

## Worksheet 1-2. Farm Business Performance Calculations

- 1) 
$$\frac{\text{Average Number of cows from DHI records or Number of cows beginning of year} + \text{number of cows end of year}}{2} = \frac{110}{2} \text{ Avg. \# of cows}$$
- 2) 
$$\frac{\text{Number of heifers beginning of year} + \text{number of heifers end of year}}{2} = \frac{75}{2} \text{ Avg. \# of heifers}$$
- 3) 
$$\frac{\text{Total pounds of milk sold for the year}}{\text{Average number of cows in a year}} = \frac{1,989,000}{110} = 18,082 \text{ milk sold per cow, lbs}$$
- 4) 
$$\frac{\text{Average number of cows for the year}}{\text{* Number of full time workers}} = \frac{110}{4.2} = 26 \text{ cows per worker}$$
- 5) 
$$\frac{\text{Total pounds milk sold for the year}}{\text{* Number of full time workers}} = \frac{1,989,000}{4.2} = 471,429 \text{ milk sold per worker}$$

\* Number of full time workers - needs to be calculated for each worker

$$\frac{\text{No. of hours/week} \times 4.3 \text{ weeks/month}}{230 \text{ hours}} \times \text{No. of months worked} = \text{Full time months}$$

$$\frac{\text{Total full time months}}{12} = \text{No. of full time workers per year}$$

- 6) 
$$\begin{array}{r} \text{Total accrual operating expenses} \\ + \text{Expansion livestock expense} \\ \hline = \text{Accrual operating expenses including exp. Livestock} \end{array} \quad \begin{array}{r} \$ 211,000 \\ + 0 \\ \hline = \$ 211,000 \end{array}$$
- 7) 
$$\begin{array}{r} \text{Total accrual receipts} \\ - \text{Accrual milk sales} \\ \hline = \text{Accrual receipts less milk sales} \\ = \text{Operating cost of producing milk} \\ (\text{Operating exp. incl. exp. livestock} - \text{receipts less milk sales}) \end{array} \quad \begin{array}{r} \$ 305,000 \\ - 256,000 \\ \hline = -49,000 \\ = \$ 162,000 \end{array}$$
- $$\begin{array}{r} + \text{Hundredweights of milk sold} \\ = \text{Operating cost per hundredweight of producing milk} \end{array} \quad \begin{array}{r} + 19,800 \\ = \$ 8.18 \end{array}$$
- 8) 
$$\text{Grain and concentrate as a \% of milk sales} = \frac{\text{Total grain and concentrate expense}}{\text{Milk sales}} = \frac{19.7}{100} \% = 19.7 \%$$
- 9) 
$$\begin{array}{r} \text{Total farm receipts} \\ - \text{Total farm operating expenses} \\ \hline = \text{Net farm income without appreciation} \end{array} \quad \begin{array}{r} \$ 305,000 \\ - 246,000 \\ \hline = \$ 59,000 \end{array}$$
- 10) 
$$\text{Debt to asset ratio} = \frac{\text{Total farm liabilities}}{\text{Total farm assets}} = \frac{239,000}{760,750} = 0.31$$
- 11) 
$$\text{Farm debt per cow} = \frac{\text{Total farm liabilities}}{\text{Number of cows (end of year)}} = \frac{239,000}{110} = \$ 2,173$$

The meaning of most of the performance measures are self-explanatory. Net Farm Incomes, the total combined return to the farm operator(s) and other unpaid family members for labor, management, and the use of equity capital. It is the farm family's net annual return from working, managing, financing, and owning the farm business.

After evaluating the past performance of the business see how well you can answer the questions below. If you can answer these five questions, then you probably have a good handle on your business and know whether expanding the farm business is a viable option. If you can't, then you need to find out more about your operation to make a justifiable decision.

- 1) What have the production and economic trends been for the farm business over the past four years?
- 2) Why has progress been made or not been made?
- 3) Can I increase productivity and profitability with what I have already?
- 4) What levels of productivity and profitability should I be at before considering a farm expansion?
- 5) What factors (financial and physical) will limit me on how big I can expand?

### Worksheet 1-3. Farm Business Performance Trends Worksheet

Business Factors	Year					Comments
	19 <u>90</u>	19 <u>91</u>	19 <u>92</u>	19 <u>93</u>	19 _____	
<b>Size of Business</b>						
Average No. of cows	110	110	106	110		
Average No. of Heifers	75	75	70	75		
Milk sold, lbs	1,847,400	1,916,250	1,884,000	1,980,000		
<b>Rates of Production</b>						
Milk sold per cow, lbs	16,795	17,420	17,775	18,000		
<b>Labor Efficiency</b>						
Cows per worker	28	28	25	26		
Milk sold per workers, lbs	461,850	489,255	453,200	471,429		
<b>Cost Control</b>						
Operating cost of producing milk/cwt.	\$ 7.92	\$ 8.81	\$ 9.13	\$ 8.18		
Grain and concentrate as a % of milk sales	19%	23%	20%	19.7%		
<b>Profitability</b>						
Net farm income without appreciation	\$ 109,075	\$ 52,695	\$ 48,727	\$ 59,000		
<b>Financial Stability</b>						
Debt to asset ratio	.12	.06	.34	.31		
Farm debt per cow	\$ 498	\$ 267	\$ 1,619	\$ 2,173		

### Farm Business Performance Evaluation

Worksheet 1-4 can be used to evaluate and analyze performance trends from information supplied on the previous two worksheets. As you go down each performance factor, circle the response that best fits the performance conditions in your business. When completed, you can determine areas in the business that may need improving before changing the operation. Each performance factor should be evaluated individually. If there are areas that need improvement but can be managed as an change takes place, then delaying the change may not be beneficial. Looking at how these factors may change after the change takes place can also help

you determine what course of action may be the most profitable in the future.

**Additional Resources:**

Northeast Dairy Farm Summary, Farm Credit Associations and Banks. Available at local Farm Credit office in the Northeast. Farm Credit Banks, P.O. Box 141 Springfield, MA 01102, phone (413) 786-7600.

Business Summary New York, State and Regions, Cornell University, Department of Agricultural Resources, and Managerial Economics, College of Agriculture and Life Sciences, Ithaca, NY 14853.

Farm Management: How to Achieve Your Farm Business Goals, 1989, Yearbook of Agriculture United States Department of Agriculture, Superintendent of Documents, United State Government Printing Office, Washington, DC. 20402

### Worksheet 1-4. Farm Business Performance Analysis Worksheet

	Areas in the business that need improving before considering farm expansion	Farm expansion has potential but can be improved with better management	Excellent position to consider farm expansion
<b>Size of Business</b>			
Average No. of cows	decreasing	remaining the same	increasing
Average No. of heifers*	decreasing	remaining the same	increasing
Total Milk sold, lbs.	decreasing	remaining the same	increasing
<b>Rates of Production</b>			
Milk sold per cow, lbs**	< 17,000	17,000 - 20,000	> 20,000
<b>Labor Efficiency</b>			
Cows per worker	< 30	36 - 40	> 40
Milk sold per worker, lbs	decreasing	remaining the same	increasing
<b>Cost Control</b>			
Operating cost of producing milk/cwt.	> \$11.00/cwt	\$10.00 - 11.00/cwt	≤ \$10.00/cwt
Grain and concentrate as a % of milk sales	> 32%	28 - 32%	< 28%
<b>Profitability</b>			
Net farm income without appreciation	decreasing	remaining the same	increasing
<b>Financial Summary</b>			
Deb- to-asset ratio	> 40%	30 - 40%	< 30%
Farm debt/cow	> \$2500	\$1500 - 2500	< \$1500

\* Average number of heifers rating applies to farms who raise own replacements and do not continually purchase additional young stock

\*\* Large breed

## Chapter 2. Factors Shaping the United States Dairy Industry

### Overview

The outlook for the United States dairy industry over the next 5 to 10 years will be shaped both by factors over which individuals and groups have little or no control as well as by the decisions and actions taken by people within the dairy sector. Several layers of factors will be at work.

At the most basic level, there are certain factors that are farm- or firm-specific, but not relevant to the overall dairy industry. At the next level are factors internal to the dairy industry. These are factors that pertain to industry members broadly; they may be generated within the industry and generally are not factors associated with other sectors. At the outermost level are those factors external to the firm and the dairy industry. These factors represent the deep undercurrents which move large sectors of the economy in one direction or another.

Given this classification of factors affecting the dairy industry, what are the key dairy industry--internal and external factors -- shaping the markets for milk and dairy products?

Relative changes in supply versus consumption have been and will continue to be the two most powerful causes of structural change in the dairy industry. In addition to these, there are other factors that have their own effects and may also have implications for growth in supply and consumption. The remainder of this chapter is a more detailed discussion of the following factors shaping the future outlook for the dairy industry over the next five to ten years:

1. Farm Structure and Regional Competition
2. Technology and Productivity
3. Urbanization and Environmental Issues
4. Food Safety
5. Government Policy
6. Consumer-Driven Markets
7. Global Markets

Table 2-1. Percentage of All Dairy Cows, by Herd Size, New York, 1969, 1978, and 1987

Herd Size	1987	1978	1969
(No. of Cows)	------(percent)-----		
Under 20	1.4	2.7	5.5
20-49	21.1	31.9	49.1
50-99	42.2	42.3	34.2
100-199	23.4	17.4	9.4
200 or more	11.9	5.7	1.9

Source: USDA

### Farm Structure and Regional Competition

The United States dairy sector has long been marked by a pattern of fewer, but larger dairy farms, with a similar trend of fewer, but more productive cows. According to the Census of Agriculture, the total number of farms reporting dairy cows has dropped from almost 2 million in 1959 to just over 200,000 in 1987. Nationally, the number of milk cows was 9.8 million in 1992, the smallest national herd in over 100 years.

Productivity trends in the United States dairy sector are reflected in annual increases in milk per cow. American dairy producers have realized a three-fold increase in average milk production since 1940, from 4,600 pounds per cow to about 15,400 pounds per cow in 1992. Since 1960 the rate of gain has been about 275 pounds per cow per year.

Two examples from the New York dairy industry illustrate the type of structural change that has been occurring throughout the United States. Table 2-1 uses Census of Agriculture data to show the distribution of New York dairy cows by herd size. It is evident that average herd size has been growing over the last 25 years with herds with at least 100 cows experiencing the greatest relative growth, increasing from 11.3% of all dairy cows in 1969 to over 35% in 1987. In contrast, the relative importance of herds in the 20-49 cow category declined by more than half over this period.

Significant improvement in milk production per cow also underscores an important source of structural change. Table 2-2 shows that while average milk production per cow in New York increased over 60% between 1965 and 1992, cow numbers fell more the 35%. The reduction in cow numbers has been far more abrupt than losses in dairy farms, resulting in steady increases in average herd size over time.

The long-run implication from both Tables 2-1 and 2-2 is that as technological and managerial improvements make dairy cows more productive, fewer but more efficient cows will be required to produce a given supply of milk. Just as farm numbers have declined and

remaining farms have become more productive, dairy cows now produce more and their numbers have declined accordingly. Declines in milk cow numbers are driven by the fact that farm productivity has increased at a faster rate than dairy product sales.

Looking ahead, if production per cow grows at its historical average rate of about 2% per year, then cow numbers must decline over 10% by the year 2000. If farm size moves up from 55 cows to an average of 75 cows per farm, the number of dairy farms in the United States should decline by about 35%.

By 2000, there will be some 8.5 million cows in the United States on about 90,000 dairy farms. These cows will produce an average of 18,500 pounds of milk per year, for a total of 157 billion pounds of milk.

Along with the changing size structure of the dairy sector, there has been a marked shift in the geographic pattern of dairy production in the United States and within New York. One hundred years ago, New York was the leading milk producing state, and there were more dairy farms in the Northeast than currently exist in the entire country. At that time, Wisconsin was the sixth largest milk producing state, and California was not even in the top ten. Fifty years ago, Wisconsin was firmly in place as the leading milk producing state; New York had slipped to third behind Minnesota; and California had climbed to ninth place.

Several of the important regional changes that have occurred over the past three decades are illustrated in Table 2-3. In particular, milk production has been shifting out of the Corn Belt, with Ohio and Iowa moving lower within the top ten states, and Illinois and Missouri dropping out altogether. The growth of milk production in Texas and Washington is an indication of the expansion in the Southwest and Pacific regions.

Of the ten leading milk producing states in 1962, total milk production has decreased in all but four since then. California and

Table 2-2. Milk Production Per Cow and Dairy Cow Numbers, New York, Selected Years

Year	Milk Production Per Cow (pounds)	Number of Cows (thousands)
1965	9,485	1,164
1970	10,885	950
1975	10,866	917
1980	12,013	911
1985	12,836	914
1990	14,456	768
1992	15,463	749

Source: USDA



Pennsylvania have moved up in the rankings, not only because of healthy growth in production in their respective states, but also due to sluggish growth in New York and a loss of production in Minnesota. In August 1993, California became the leading milk producing state. Wisconsin remains in second position.

Much of the rapid dairy expansion in California, Texas, Washington, and other western states is attributable to economies of scale; per-unit production costs decline as herd size increases. The western region has herds in the range of 500 to 1,500 cows and the lowest full production costs in the United States. These stand in contrast to the traditional milk producing regions of the Northeast and Upper Midwest with average herd sizes of 50 to 150 cows and higher production costs.

Over the next decade, milk production will continue to grow more rapidly in the West, with smaller pockets of growth in the Southeast. Moderate growth in Pennsylvania, Vermont, and New York will offset declines elsewhere in the Northeast, but this region's share of national total production will decline. Pennsylvania's total milk production will eventually surpass New York's. After some readjustment struggles during the 1990s, milk production will rebound in the Upper Midwest.

Just as significant shifts have occurred at the national level, important changes have occurred in the geographic pattern of New York milk production. Figure 1 indicates the percentage change in county-level milk marketings between December 1979 and December 1989. While

Table 2-3. Milk Production of Top Ten Dairy States, 1962 and 1992

State	1992		1962	
	Rank	Amount (million pounds)	Rank	Amount (million pounds)
Wisconsin	1	24,103	1	18,598
California	2	22,084	4	8,308
New York	3	11,582	2	10,688
Pennsylvania	4	10,364	5	7,192
Minnesota	5	9,854	3	10,480
Texas	6	5,590	--	----
Michigan	7	5,397	7	5,606
Washington	8	4,836	--	----
Ohio	9	4,690	8	5,441
Iowa	10	4,276	6	6,196
Illinois	--	----	9	4,245
Missouri	--	----	10	3,624
United States		151,747		126,251

Source: USDA

overall state milk marketings grew just under 4% during this period, most counties in the Finger Lakes and Western New York regions experienced significantly higher gains. On the other hand, the most significant percentage losses were posted in counties in the southeastern region of the state where increased urban sprawl and competition for space has taken much land out of agriculture. Also, some of the marketing gains in the western region of the state are due to farmers who moved there after selling their farms in the eastern region of the state.

### Technology and Productivity

In the past, dairy farmers have benefitted from technologies such as Dairy Herd Improvement, three-times-a-day milking, automatic grain-feeding systems, and automatic removal of milking units. A 1986 study by the United States Office of Technology Assessment (OTA) concluded that, among all agricultural

commodities, dairy stood to benefit the most from the future introduction of new technology. Prospective technologies in the areas of animal health, animal reproduction, and food processing could emerge within the next decade. The recent debate over new technology in the dairy industry has focused mainly on man-made bovine somatotropin. The technologies that already exist today are sufficient to fuel productivity increases well into the future. The prospects for new technologies only increase this potential.

Along with increased production per cow, technological change is in part also responsible for increased milk production per farm. Some technologies have inherent scale or size advantages. Milking parlors, for example, represent a substantial capital investment on any farm; however, a large farm can better bear such an investment because the expenditures do not increase in direct proportion to cow numbers.

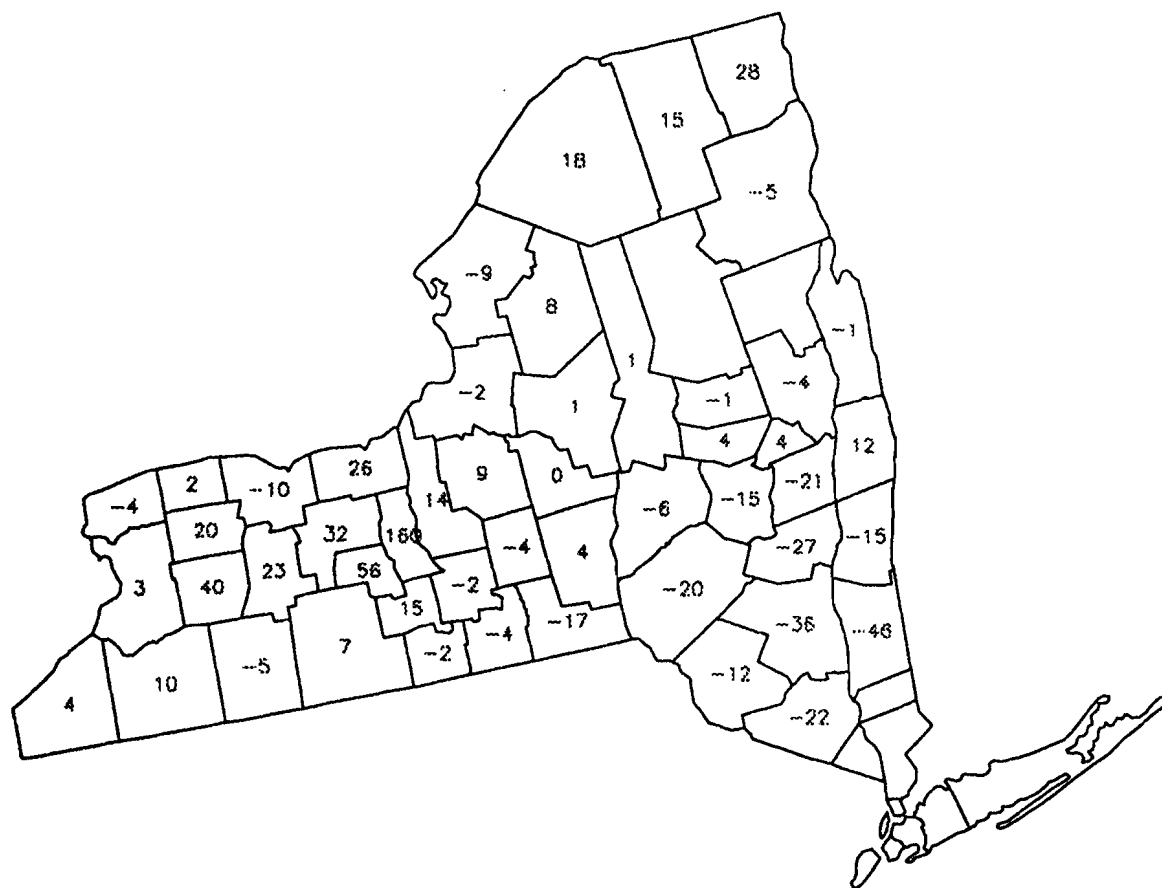


Figure 2-1. Percentage change in milk marketings, by county, December 1979 - December 1989

vestment because the expenditures do not increase in direct proportion to cow numbers. Other technologies, such as artificial insemination, are more size-neutral. To take full advantage of these technologies requires better-informed farmers who have developed good management skills. The farmers in the best position to exploit these gains from new technology will likely grow in size.

The introduction of new technologies in the dairy industry also affects where milk production will expand in the future. The 1986 OTA study mentioned above found that Arizona, California, and New Mexico were, in descending order, the three states in the best position to exploit gains from new technology. Thus, a combination of economies of scale and increased productivity from new technologies is expected to hasten growth in farm size and to increase the relative importance of the West and Southwest in the United States dairy industry.

Technological change in processing and marketing will be just as, if not more, important as changes at the farm level. Some examples of cost-reducing technologies and practices include continuous processing, high-speed fillers and packaging, energy-efficient concentration technologies, lower-cost handling and warehousing methods, and the like.

Other technologies will lead to new products, packaging, or processes. For example, processing technologies may be more successful in helping to overcome the growing problem of excess milkfat than on-farm changes. Technologies to remove cholesterol from milkfat are just now being explored; however, additional technologies, some costly, will be required to reduce and/or change milkfats. The purpose of these technologies will be to address consumer concerns relating to things such as a healthful diet or the environment.

In the past, the primary emphasis of technological change probably has been to reduce per-unit costs. Cost reduction will continue to be a strong incentive, but future technological change in processing may be more

motivated by quality considerations.

## Urbanization and Environmental Issues

The amount of land used for agricultural purposes has declined, in part because of increased competition from non-agricultural sources. Remaining dairy farm operations will face increased numbers of non-farm neighbors who are less knowledgeable about agricultural production practices and are more likely to complain about problems such as odors. It is important to realize that complaints of this type are not just limited to city dwellers who have moved into the country, but may also stem from long-time rural residents or even non-dairy agricultural operators who are adversely affected. In order to mitigate this problem, farmers will have to be increasingly careful about handling and storing manure.

Many state and local governments operate programs designed to counteract the influence of population expansion on farm operations in traditional farm communities. This involves limits on property taxes, agricultural districting, farmland conservancies, and right-to-farm laws. While these programs have probably been more effective than many farmers would guess the problem is hardly solved.

With this background, the inescapable conclusion is that dairy farming is taking place in an increasingly urban environment. New York lost about 30% of its dairy farms during the 1980s. Those counties with large numbers of commuters or seasonal residents from the greater New York City area, or those on the edge of urban expansion in other smaller upstate cities saw their dairy farm numbers decline between 40% and 60% over the same period.

More evidence of increased competition for land comes from a 1988 comprehensive survey of dairy farmers by the New York State Legislative Commission on Dairy Industry Development that asked: *"Is there currently much pressure in your area to sell farmland for development purposes?"* Compared to a statewide average of 41%, 87% of farmers in

the Northern Hudson region (Washington, Rensselaer, Columbia, Albany, Schenectady, Saratoga, and Greene counties) responded "Yes," as did 95% in the southeastern region (Sullivan, Ulster, Orange, and Dutchess counties).

What is likely to happen over the next decade? Unless and until the general public strongly perceives an imminent threat to food production capacity and stable prices, there is unlikely to be any major effort to seriously preserve farmland. For the foreseeable future, there will more likely be pressures to conserve land and habitats for environmental reasons.

While urban sprawl has contributed to the growing interest in environment-related issues, there are many others. The general public used to think of farmers as caretakers of the land. Concerns are now being expressed that dairy farming may have an adverse effect on the environment. Criticisms range from the legitimate to the ridiculous. In either case, the issue should not be taken lightly, as highlighted by an April 1993 incident in Milwaukee where thousands of city residents fell ill because of a parasite called *cryptosporidium* in the drinking water supply. This parasite often dwells in the gut of cattle and other mammals. The Milwaukee mayor was quick to blame animal agriculture, although the source of the parasite has not been established and probably never will be.

State governments are beginning to take initiatives on environmental issues, and it is expected that federal initiatives in the environmental arena will be expanded at some point in the not too distant future. In the Northeast, activities or practices which may pollute the environment have received the most attention, especially as they relate to waste management and water quality. For example, a proposed Pennsylvania law would limit the stocking rate for farms with livestock operations. Similarly, New York City water officials have sought to avoid spending up to \$8 billion on a water filtration system for their 2,000 square-mile watershed by establishing a pilot "best management practices" program for the

area's 350 dairy farms. Participation is voluntary, but if fewer than 85% of the farms cooperate over the next five years, the city could impose restrictive land-use regulations that would drive out many existing farms.

Conservation and quality of natural resources are also serious issues. Leading examples are water usage and quality in the West and South where many of the fastest-growing milk producing states are in dry areas or near sensitive ecological areas. State environmental regulations mandate that water consumption permits be issued for Arizona dairy farms. As part of a permitting process, Washington and Texas require that larger dairy farms have waste management systems that meet state standards. Florida went so far as to offer dairy farms near Lake Okeechobee a "buyout" option after introducing very strict runoff standards that would require large investments in waste management systems for any farmer wishing to stay in the area. The largest farms tended to make the investment and stay.

The balance of power seems to be shifting environmentalists. As this occurs, decisions affecting dairy production increasingly will be made by people outside the agricultural community. In the past, dairy interests have banded together to work with regulators to find flexible, less-punitive solutions to environmental problems. This willingness to cooperate on the part of dairy interests will be even more important in the future.

Increased regulation of milk production will lead to higher costs of production. The burden imposed by new environmental regulations will likely have unequal effects in different regions of the country. It is difficult to speculate on which areas will be most disadvantaged or by how much. In some areas, many of the obstacles associated with regulation can be met by new production practices or technological innovations, thereby making cost rather than survivability the central issue. In other areas, regulation may lead to geographic shifts in milk production with implications for domestic and international competitiveness.

## Food Safety

The area of food safety ties together certain environmental concerns and consumer issues. Receiving particular scrutiny are on-farm production practices and additives introduced during processing.

Increasing attention is focused on chemical use in food production ranging from pesticides in feeds and foods to animal drugs. A related concern is food additives. Although one could rightly argue that chemicals are added to foods for the purpose of improving quality, it is also true that consumers are becoming increasingly wary of any food additives. As most dairy products have no or few additives, this is a positive development.

Several incidents in the past decade have tarnished the dairy industry's "clean green image." The largest recorded outbreak of salmonella poisoning in the United States occurred in 1985 when unpasteurized and pasteurized milk were accidentally mixed at a processing plant in the Chicago area. Over 16,000 cases were confirmed and up to ten times that number were believed to be affected by the incident. In November 1990, consumer interests were stirred by media reports about antibiotic drug residues in the nation's milk supply. This led to a United States General Accounting Office investigation that was critical of the Food and Drug Administration's ability to demonstrate the safety of the milk supply. Also, the November 1992 deaths of several people who consumed hamburgers at a fast food chain in the Pacific Northwest were due to an outbreak of *E. coli* bacteria linked to under-cooked dairy beef.

The negative public reaction to synthetic bovine somatotropin has been presented as a food safety concern. Despite the overwhelming conclusion by the scientific community that there is no food safety or human health threats from bovine somatotropin, consumers are clearly concerned about the use of hormone supplements in animal agriculture. In addition, consumers are concerned about the possibility of

scientists underestimating the potential for food safety problems.

Thus, dairy farmers and milk processors must contend with what may be legitimate food safety issues and, in the age of biotechnology, with issues that appear to have little scientific merit as well. Some items of concern will not be legitimate safety issues, but they may affect perceptions of quality. All in all, dairy products have a better than average ability to score well on the "clean" agenda and the industry should probably strive to preserve and emphasize this desirable status.

## Government Policy

Since the 1930s, federal and state governments have assumed major regulatory roles in United States dairy markets. Many changes in the industry since then have prompted critics to ask whether government intervention is still warranted. Advocates argue that federal policies still address vital needs not altered by changes in technology or market structure and thus serve a legitimate public interest.

Traditional federal farm programs may be at a crossroads. The direction taken may lead to modified but continued commitment to a positive regulation of farm markets, or it could lead to the dismantling of programs built up over the past 60 years. The worst-case scenario would be keeping bureaucratic programs that are either ineffective or disruptive.

The dairy industry is also learning that other federal policies can be just as or more important than dairy-specific programs. Examples include health policies that shape consumer dietary concerns, welfare policies that affect the use of dairy foods in food assistance programs, energy and transportation policies that affect the cost of fuels and energy, environmental policies that require changes in production practices and add to production costs, fiscal policies that determine how many federal dollars are available for dairy programs, and trade policies that are more concerned with the big picture

than the little parts of that picture. The dairy industry has a stake in all of these major policy areas, but it is not large enough in and of itself to have much influence on the directions taken. Developing alliances with larger groups and adopting realistic objectives could give the dairy industry at least some voice in shaping policy decisions.

### Consumer-Driven Markets

The overall size of the dairy sector is ultimately determined by sales, and sales will be determined by the changing demands of United States consumers and the success United States processors have in developing foreign markets. The dairy industry must in the long run provide dairy products that people want to buy. Changes in preferences and the nation's demographic make-up will have to be accommodated.

Factors expected to impact future consumption of dairy products include: interest in healthy diets; ability of dairy processors to develop new products; positive consumer attitudes toward dairy product attributes; the relatively low cost of dairy products; the success of industry promotion efforts; and, developments in the ingredient and food service markets. Perhaps the most significant trend affecting dairy consumption is the changing population profile in the United States. Although these population changes point to declining per capita sales of dairy products, some of the factors discussed below will help to offset some of the declines, but slow long-term growth is the most optimistic prediction for domestic markets.

The best recent example of a consumer factor affecting farmers is the declining use and value of milkfat. This concern has made itself vividly apparent in per capita consumption of dairy products. While per capita consumption of all dairy products has been fairly stable since 1970, the specific product mix has not. Per capita consumption of low-fat and skim milk surpassed that of whole milk during the 1980s. This is in large part a reaction to concern about fat and

cholesterol in the diet, which ranks as the top food related health concern in the nation. Echoing this concern was a National Dairy Council study finding that 20% of Americans had changed their diets due to fears related to cholesterol and fat. Dairy processors have responded with many new low-fat and non-fat products; however, these products cannot help but taste different from the traditional versions and consumer acceptance has been somewhat mixed. Thus, more will need to be done and the dairy industry will be increasingly challenged to find uses for the residual unwanted milkfat.

It's not all bad news. Dairy products possess several positive nutritional qualities, such as high calcium content, which have helped dampen some of the negative concerns about fat. Similarly, favorable prices for dairy products, which rose at a rate 20% less than all consumer prices between 1970 and 1991, have been a positive factor in encouraging consumer demand. Also, the dairy industry has actively promoted fluid milk, and the response to advertising expenditures has been promising.

Dairy product consumption is very closely linked to the racial, age, and geographic makeup of the population. As the population profile changes, so does milk consumption. The vast majority of beverage milk is consumed by people 18 years old and younger and in general, dairy product consumption declines with age. Blacks tend to consume less dairy products than whites, while some Hispanic people have high levels of dairy product consumption. In the past, women have tended to be less likely to consume dairy products, but this has changed somewhat as milk is viewed as an important source of calcium. People in the northern regions of the United States tend to consume more dairy products than their southern neighbors.

Taken as a whole, many of the demographic trends point in a negative direction for dairy. The United States population is aging, becoming more racially and culturally diverse, growing most in areas of the country where dairy

consumption is lower than average, has less time for traditional meals and cooking, and is confronted by an ever-increasing selection of alternative beverages. Although this is not universally true, many of the expanding cultural groups are not associated with diets in which dairy products play a large role. While it is highly unlikely that anything will substantially alter these population and consumer market trends prospects in the ingredient and food service markets may be better. The challenge for the dairy industry is to make the most of its opportunities.

Over the next five to ten years the factors discussed above will drive sales and prices and shape the structure of the dairy production and processing sub-sectors nationally and regionally. An intermediate-term outlook for the structure and sales of the dairy industry is discussed below.

Trends in commercial dairy product sales over the past few decades are highlighted in Table 2-4. From 1960 to 1980, total sales of dairy products (milk equivalent fat basis) showed only small gains as increases in cheese sales did little more than offset declines in butter and other categories. Beginning in 1984, dairy product sales increased at much faster rates. Favorable prices and new promotion campaigns may explain much of the increase; however, one can also observe that sales of some previously weak products like butter tended to stabilize while cheese sales skyrocketed.

Population is growing at a rate of almost 1% per year. However, the dairy industry may be challenged to keep total dairy product sales increasing at even half that rate. Although minimal government supports and continuing productivity gains will mean retail product prices grow at much less than the general rate of inflation, favorable prices alone may not be enough to offset unfavorable demographic and consumer preference trends.

Total commercial disappearance may plateau at around 140 billion pounds of milk equivalent for a few years in the early to mid-1990s and gradually edge upward for the rest of the decade

at a rate of 0.5% per year. A primary reason will be a tapering off of cheese sales. One absolutely vital question for the United States dairy industry will be: to what extent it can augment sluggish domestic sales with new export sales; or will it lose share of the domestic market to imports?

## Global Markets

At the turn of the twentieth century, dairy markets were generally thought of as having a small geographic scope--markets were local. As the year 2000 rapidly approaches, few if any products will be thought of in this manner. If not obvious already, the dairy industry should assume that it is about to be thrust into the world food market.

Presently restrictive global agricultural trade policies limit the extent to which the United States dairy industry participates in world markets. However, policy is currently switching from protectionism to expansionism. This change, which reflects long-run pressures for freer trade, is symbolized by the General Agreement on Tariffs and Trade (GATT) and

**Table 2-4. Estimated Commercial Sales of Dairy Products in the U.S., 1960-1990**

Product	1990	1975	1960
(million pounds)			
Milk Equivalent Fat Basis			
Total	139,000	113,800	110,992
Product Weight			
Fluid	53,918	53,232	53,182
Frozen Deserts (gals.)	1,427	1,263	969
Cottage Cheese	833	991	769
Cheese	6,211	3,049	1,478
Butter	915	951	1,247
Nonfat Dry Milk	695	697	973

Source: USDA

the passage of the North American Free Trade Agreement (NAFTA).

The near future, will be an era of increased commercial opportunity and uncertainty, and the United States dairy industry may find that it is no longer so insulated from the rest of the world. How it will fare in the global arena is difficult to predict. Attractive potential markets exist in Mexico and Latin America, the emerging market economies of East Asia, Japan, and Eastern Europe, but United States processors face enormous challenges in expanding exports. Processors have little experience in foreign markets and have much to learn.

The dairy industry will benefit from United States foreign food-assistance programs and ultimately from worldwide programs to raise the incomes and standards of living in developing countries. For the intermediate term, slow aggregate sales growth is the most likely scenario. While changes in global trade policy will be made gradually over a ten-year period, this will feel like an abrupt change for the dairy industry. It's time to start getting ready.

### Summary

Certain factors discussed above, like increasing productivity, have played major roles in influencing dairy markets in the past, and will likely continue to be important in the foreseeable future. Other factors, such as consumer concerns about healthy foods, are more recent, but have been around long enough for the dairy industry to respond. Still other factors as well as environmental concerns are new enough that no one is really sure of all their implications and impacts.

Yet unidentified issues factors will no doubt emerge in the next five to ten years. Some of these factors and trends will lead to changes and require responses that will be difficult or costly for the dairy industry at either the producer or processor level, or both. In some cases, dairy products have advantages that can be exploited in a positive way.

Dairy industry leaders will want to first ask whether the intermediate outlook presented here seems reasonable. Given this or any other outlook, the next step is to ask whether these outcomes are satisfactory and what can be done to lead to more desirable outcomes.



### Additional Resources:

Dairy Herd Management, to subscribe contact Dairy Herd Management, Circulation Department, P.O. Box 1423, Lincolnshire, IL 60069, published monthly.

Dairy Marketing Notes, Department of Agricultural, Resource, and Managerial Economics, Cornell University, 102 Warren Hall, Ithaca, NY 14853. For subscription information write to Dr. Andrew Novakovic at this address.

Dairy Profit Weekly, to subscribe contact Dairy Profit Weekly, P.O. Box 8885, Minneapolis, MN 55408-0885, published weekly.



## Chapter 3. Deciding Your Future Course -- Where to from here?

You have looked at dairy industry trends, you have completed some analysis of your dairy business and how your farm fits into the picture. What does this mean for the future of your business? For how long is it reasonable to plan?

Your planning horizon will depend on your age and health, how many more years you plan to actively farm, the ages and interests of your children and other factors specific to your farm and family situation. Since the dairy industry is rapidly changing, and personal and family situations can change quickly, a five- to ten- year planning horizon is appropriate for many situations. Of course, debt repayment may be scheduled over a much longer period for major capital investments.

Business planning that will result in choosing a course for your farm is the kind of decision-making most appropriately done at the "board of directors" level. The "board of directors" for your farm may include all adult members of your immediate family plus some from older and/or younger generations, business partners, key employees, and "outside directors" such as consultants, lenders, or other trusted advisors. It is important to involve all members of the team that will implement the business plan. If you have not yet involved all appropriate "directors" in the business planning process, do it now. Hopefully, a consensus can be reached or the composition of the team can change so that there will be total commitment to implementation of the business plan.

### Developing a Vision for Your Farm

As this is being written, the New York Mets have the worst record in baseball with 45 wins and 85 losses. Yet in recent years they have been one of the premier teams in baseball and recently have traded heavily and have spent millions to sign free agents. What went wrong? The author's argument is that the trades and signings were made to solve perceived urgent problems with little vision of what was needed to maintain a winning team.

How is this relevant to a farm business? Similarly, to continually meet the objectives of the family or families ("be a winner"), there must be a vision of where the farm is headed. Otherwise, farm decisions, like the Mets' trading decisions, may be based on perceived urgent needs and will not necessarily lead in positive directions.

As you look at *Your Dairy in Transition*, there are three questions you must address:

1. What is it that you wish to accomplish utilizing the assets you currently have invested in the farm business?
2. Is remaining in the dairy industry the best way to accomplish the answer to question 1?\*
3. What is your vision for the future of our dairy farm business?

*\*If you answer "No" to this question, you should go to the "Winding Down Your Farm" bulletin in this series.*

The exercise on the following two pages is

designed to help you answer all three questions but with the focus on question 3. Begin by having each individual associated with the business complete Worksheet 3-1. Then discuss each item, specifically looking for areas of agreement and areas of potential disagreement. Discuss areas of potential disagreement. For example, one family member writing "maintain business size" and another writing "grow continuously" would be an area of concern and discussion.

You should continue this discussion until you reach general agreement of the "board of directors" to the vision. You are then ready to use Worksheet 3-2 (next page) to articulate the vision by writing a mission statement. An example mission statement is:

*Our mission is to operate a dairy farm that will provide:*

1. *Financial success through the marketing of high quality milk.*

2. *A high standard of living for our family and a comfortable retirement for family farm participants.*
3. *A rural family living environment with ample time for recreation and personal growth for all involved.*
4. *Opportunities for family member involvement and advancement in the farm business.*
5. *Recognition for accomplishment. The farm should be comfortable to work around, be labor efficient, provide a happy work environment, and express a high degree of pride.*

Your mission statement will be the basis or criteria that the farm should use to evaluate alternative courses of action. When setting goals and making plans for the future of the farm business, the mission provides a framework for deciding what is important. The mission statement is also used to decide what the farm should not do.

### Worksheet 3-1. Farm Values and Direction

1. In the square, write a phrase which describes your farm business, the type of farm business you are in.
  
2. In the outer circles, jot down things that, as a farm business
  - a. are important to you
  - b. are valued
  - c. indicate your future direction



## Intensifying Management

The dairy farm manager of the future will need to take more control over his or her business. Successful farms will implement solid business plans with contingency plans for poor weather and adverse conditions. Excellent records will be essential to maintaining control. Records of current and past performance must provide the basis for decision making in the future. Decisions focused on the records of an individual business will lead to higher performance than decisions based on industry averages and perceptions. Relevant farm records will enable farm managers to utilize the resources available to the farm to maximize performance.

## Future Options

When planning for the future, most dairy farm operators will choose one or some combination of six general options:

1. **Improve** the dairy farm operation by adopting more appropriate technological and/or management methods, or by doing things better with about the same size operation.
2. **Diversify** the farm by adding additional enterprises to maximize the use of available resources.
3. **Specialize** in one or two of the major enterprises (cows, heifers, or crops) associated with a dairy farm to reduce the number of operations with which the manager must be concerned.
4. **Relocate** the business to a site that is more suitable to dairy farming with respect to soil, climate, or community.

5. **Expand** the business by increasing the number of cows and acres.
6. **Exit** the business of producing milk to retire, move to a less intensive type of farming, or change to a different occupation.

## *Develop Excellence*

Suppose that you want to farm for at least ten more years, there is no obvious successor to the business, and you believe that you can meet your family financial goals if you can remain in the top 20% of farms of similar size for pounds of milk sold per cow and profitability. Or, suppose that no additional land is likely to be available within a reasonable distance of your base of operations and you will not consider moving. Perhaps your business is quite new, it is doing well but debt load needs to be reduced over the next several years before change should be seriously considered. For all three of these scenarios, and many more, the general business plan will be to develop excellence with little change in cow numbers.

To develop excellence you will stay focused on doing everything well and try to improve some area of the business each year. Many farmers say, "I already know how to farm better than I am now." You will need to focus on paying attention to detail so that you can farm as well as you know how to. You will probably repair buildings with an eye toward extending their useful life through your planning horizon. Machinery trades and overhauls will be done with the objective of keeping it in good condition but not increasing machine capacity. You are likely to invest in professional development of yourself and provide opportunities for employees to broaden their range of skills. You may be able to reduce the amount of land you rent as you improve production on the acres you

own or lease on a long-term basis. Methods of monitoring activities to achieve desired results should be developed. You will seek ideas from agribusiness representatives or consultants for improving the way you farm. Since rapid change will not be occurring in your business, you have the opportunity and perhaps the need to refine the way things are done as you strive for excellence.

### *Diversification or Specialization*

For many farm businesses, diversifying by adding another enterprise may better utilize the management or physical resources available to the farm business. In other situations it may be more appropriate to specialize to improve the ability of the farm to meet the goals of the family.

Diversification of a farm business involves adding an enterprise or aspect to the farm business. Diversification can mean adding an additional enterprise like growing another crop, or it may involve starting another business such as a machinery repair shop to service neighbors. It could also mean vertically integrating the enterprise by developing a processing or retail enterprise to sell farm products. Diversification also offers the opportunity for division of the business at retirement, or the option to sell part while allowing continuation of another segment of the business.

In instances where additional family members are interested in becoming more involved in the management of the farm business, diversification may be a particularly viable option for improving the profit potential of the farm. Diversification allows more opportunities for individuals to "take charge" of a certain aspect of the farm business.

Specialization occurs when a farmer decides to reduce the number of enterprises or activities that the farm is involved with. Typical instances of this would be the elimination of the heifer enterprise, or contracting another farmer to raise heifers for dairy replacements, or switch from growing your own grain or forages to purchasing them.

Whenever the farm management team or labor force is reduced is a good time to look at specialization as an option for the future. Typically, in single-family operations where the children are grown and choose to no longer be involved in the farm business, it may make sense for the parents to consider specialization to reduce the labor demands of the business. Specialization may allow a family to continue to milk the same number of cows or increase numbers slightly, but eliminate the workload of the heifer or cropping enterprise. "Farming Alternatives - A Guide to Evaluating the Feasibility of New Farm-Based Enterprises" is a useful publication for assessing the potential of a farm business for specialization or diversification.

### *Relocation*

As farm families develop their mission statements and long range plans, they may decide that their present location does not provide opportunities that they are looking for. Moving a dairy business to a location that provides the desired opportunity is an option. When thinking about determining and evaluating a location for the dairy, there are many things to consider. Following is a short list of things to consider/do if relocation is in the future.

- ✓ What are the reasons for relocation?
- ✓ What are the business characteristics of the new location?

- ✓ What are the Social characteristics of the new location?\*

*\*In chapter 2, describes the details you should consider.*

Once information is collected on a possible location to move the dairy farm to, an evaluation process needs to take place. When evaluating a possible location compare against what you think it will be down the road. You are not moving for today, but for 10 years in the future.

If the location is deemed to be meet your vision and goals better than your current location and relocations is going to be under taken, there is an additional list of things to consider.

- ✓ What farm assets are doing to be moved and when?
- ✓ What assets will be sold and when?
- ✓ When will new farm be purchased?
- ✓ When will old farm sell?
- ✓ What are tax implications of a farm sale?
- ✓ When is the start up date at the new location?
- ✓ When will field work and feed acquisition at the new facility begin?
- ✓ When will staffing of new facility take places?

### *Expansion*

Suppose that you have identified no major weaknesses in the business and income seems to be about as high as you can expect from present business size. You would like to add another manager to the business, which will require more income and additional management challenge. Or perhaps the barn and milking system are obsolete and worn out to the point where new facilities should be seriously considered. Your Dairy in Transition -- A

Planning Process for Considering Dairy Farm Expansion is a sister publication that deals with many aspects of dairy farm expansion. It does not provide sufficient detail for all of the planning necessary for successful expansion. It should, however, provide enough detail so that you can decide whether expansion is financially and environmentally feasible in your situation. It is possible that after you have worked it through, you will decide that expansion is not feasible at this time, and that one of the other general alternatives is more appropriate.

### *Winding Down Your Farm Operation*

Finally, most operators at one time or another face the major transition of winding down the farm operation. This transition might involve a decision to retire or turn the operation over to the next generation, to leave farming for another occupation, or it could result from financial problems that require an exit from farming. Any of these three reasons for winding down may take several years to implement -- particularly the retirement option.

Winding down the farm operation is a major and life-changing decision. It requires careful thought about goals, consideration of one's physical and human resources, objective analysis of operations, and substantial planning. In many respects, winding down is as critical and difficult as "tooling up." Because of its importance, "Your Dairy in Transition -- Winding Down Your Farm Operation," another publication in this series, addresses many of the issues that need consideration.

Additional Resources:

Farming Alternatives: A Guide to Evaluating the Feasibility of New Farm Based Enterprises, available through Northeast Regional Agricultural Engineering Service, Cornell University, 152 Riley-Robb Hall Ithaca, NY 14853.

Farm Management Resources Notebook, Pro-DAIRY Program, Cornell University. Available from Distribution Center, Media Services, Resource Center, Building 7, Business and Technology Park, Ithaca, NY 14853



# Appendix

## Worksheets for Analyzing Your Farm Situation

The blank worksheets on the following pages are provided for use assessing your own farm business performance and trends.

**Worksheet 1-2. Farm Business Performance Calculations**

1) 
$$\frac{\text{Average Number of cows from DHI records or} \\ \text{Number of cows beginning of year} + \text{number of cows end of year}}{2} = \text{_____ Avg. \# of cows}$$

2) 
$$\frac{\text{Number of heifers beginning of year} + \text{number of heifers end of year}}{2} = \text{_____ Avg. \# of heifers}$$

3) 
$$\frac{\text{Total pounds of milk sold for the year}}{\text{Average number of cows in a year}} = \text{_____ milk sold per cow, lbs}$$

4) 
$$\frac{\text{Average number of cows for the year}}{\text{* Number of full time workers}} = \text{_____ cows per worker}$$

5) 
$$\frac{\text{Total pounds milk sold for the year}}{\text{* Number of full time workers}} = \text{_____ milk sold per worker}$$

\* Number of full time workers - needs to be calculated for each worker

$$\frac{\text{No. of hours/week} \times 4.3 \text{ weeks/month}}{230 \text{ hours}} \times \text{No. of months worked} = \text{Full time months}$$

$$\frac{\text{Total full time months}}{12} = \text{No. of full time workers per year}$$

6) 
$$\begin{array}{r} \text{Total accrual operating expenses} \\ + \text{Expansion livestock expense} \\ \hline \text{=Accrual operating expenses including exp. Livestock} \end{array} \quad \begin{array}{r} \$ \text{_____} \\ + \text{_____} \\ \hline = \end{array} \quad \$ \text{_____}$$

7) 
$$\begin{array}{r} \text{Total accrual receipts} \\ - \text{Accrual milk sales} \\ \hline \text{= Accrual receipts less milk sales} \\ \text{= Operating cost of producing milk} \\ \text{(Operating exp. incl. exp. livestock - receipts less milk sales)} \end{array} \quad \begin{array}{r} \$ \text{_____} \\ - \text{_____} \\ \hline = \end{array} \quad \begin{array}{r} - \text{_____} \\ = \\ \hline \end{array} \quad \$ \text{_____}$$

$$\frac{\text{+ Hundredweights of milk sold}}{\text{= Operating cost per hundredweight of producing milk}} = \frac{\text{+ _____}}{\text{= \$ _____}}$$

8) 
$$\text{Grain and concentrate as a \% of milk sales} = \frac{\text{Total grain and concentrate expense}}{\text{Milk sales}} = \text{_____ \%}$$

9) 
$$\begin{array}{r} \text{Total farm receipts} \\ - \text{Total farm operating expenses} \\ \hline \text{=Net farm income without appreciation} \end{array} \quad \begin{array}{r} \$ \text{_____} \\ - \text{_____} \\ \hline = \end{array} \quad \$ \text{_____}$$

10) 
$$\text{Debt to asset ratio} = \frac{\text{Total farm liabilities}}{\text{Total farm assets}} = \text{_____} = \text{_____}$$

11) 
$$\text{Farm debt per cow} = \frac{\text{Total farm liabilities}}{\text{Number of cows (end of year)}} = \text{_____} = \text{_____}$$

## Worksheet 1-3. Farm Business Performance Trends Worksheet

Business Factors	Year					Comments
	19__	19__	19__	19__	19__	
<b>Size of Business</b>						
Average No. of cows						
Average No. of Heifers						
Milk sold, lbs						
<b>Rates of Production</b>						
Milk sold per cow, lbs						
<b>Labor Efficiency</b>						
Cows per worker						
Milk sold per workers, lbs						
<b>Cost Control</b>						
Operating cost of producing milk/cwt.						
Grain and concentrate as a percent of milk receipts						
<b>Profitability</b>						
Net farm income without appreciation						
<b>Financial Summary</b>						
Debt to asset ratio						
Farm debt per cow						

## Worksheet 1-4. Farm Business Performance Analysis Worksheet

	Areas in the business that need improving before considering farm expansion	Farm expansion has potential but can be improved with better management	Excellent position to consider farm expansion
<b>Size of Business</b>			
Average No. of cows	decreasing	remaining the same	increasing
Average No. of heifers*	decreasing	remaining the same	increasing
Total Milk sold, lbs.	decreasing	remaining the same	increasing
<b>Rates of Production</b>			
Milk sold per cow, lbs**	< 17,000	17,000 - 20,000	> 20,000
<b>Labor Efficiency</b>			
Cows per worker	< 30	36 - 40	> 40
Milk sold per worker, lbs	decreasing	remaining the same	increasing
<b>Cost Control</b>			
Operating cost of producing milk/cwt.	> \$11.00/cwt	\$10.00 - 11.00/cwt	≤ \$10.00/cwt
Grain and concentrate as a % of milk sales	> 32%	28 - 32%	< 28%
<b>Profitability</b>			
Net farm income without appreciation	decreasing	Remaining the same	increasing
<b>Financial Summary</b>			
Deb- to-asset ratio	> 40%	30 - 40%	< 30%
Farm debt/cow	> \$2500	\$1500 - 2500	< \$1500

\* Average number of heifers rating applies to farms who raise own replacements and do not continually purchase additional young stock

\*\* Large breed