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**WHAT NEEDS TO BE DONE TO REMAIN
COMPETITIVE IN MILK PRODUCTION?**

by

B. F. Stanton

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Department of Agricultural Economics
Cornell University Agricultural Experiment Station
New York State College of Agriculture and Life Sciences
A Statutory College of the State University
Cornell University, Ithaca, New York, 14853

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WHAT NEEDS TO BE DONE TO REMAIN COMPETITIVE IN MILK PRODUCTION?

Americans have become painfully aware in the 1980s that being competitive is important as we have watched our nation lose its export markets to aggressive competitors and moved from being the largest creditor nation in the world to the largest debtor nation in less than ten years. The title provided for this presentation can be approached from a number of perspectives. One is looking at the U.S. dairy industry in comparison to others in the rest of the world; a second is looking at the competitiveness of different regions or production areas within the U.S.; the third has to do with individual farms within a region. It is to the last of these that most attention will be directed, but first a few comments about the first two issues.

The United States in World Dairy Markets

Nearly every rich nation in the world is having difficulty balancing domestic milk supplies with consumer demand. Dairy surpluses are a common problem in Europe, North America, and Japan. Government programs to support milk prices and in many cases to manage production are the rule rather than the exception. In this kind of setting, world market prices for dairy products are distorted by export and import quotas, government purchase and disposal programs, and substantial and effective barriers to trade. How well would American milk producers and processors compete with Canadians, West Europeans, and New Zealanders in a free market situation? No one knows! Protection has been in place too long. Most recently, dairy has been exempted from the US-Canada free trade initiative even though grains, fruits, vegetables and most agricultural products including wine and beer have not. There's no question that there are low cost producers in all of these locations who could compete in a free trade setting. But politically none of the major dairy producing countries, with the exception of New Zealand, is likely to opt for anything more than small reductions in trade barriers for a few dairy products in the near future. Thus, the likelihood of real competition in open markets between dairy producers in Western Europe and the United States, while possible, still seems highly improbable in the next 10-15 years.

Competition Among Producing Regions

There has been no shortage of competition for shares of the national market for milk and dairy products within the several regions of the U.S. In the last two decades, the number of dairy producers has decreased dramatically and concentrated more heavily in the major dairy producing states. The Northeast and Lake States have maintained their relative

shares of total production. The Pacific and Mountain States have increased their share at the expense of other producing regions. Most of the reductions have occurred in the Corn Belt, Great Plains and the Southeast (Table 1).

Table 1. MILK PRODUCTION BY REGION
United States, 1965-1985

| State or region | 1965 | 1975 | 1985 |
|----------------------|-------------------------|-------------|-------------|
| | <u>billion pounds</u> | | |
| Northeast | 25.7 | 23.5 | 28.7 |
| Lake States | 35.1 | 32.3 | 41.5 |
| Mountain and Pacific | 16.0 | 19.2 | 29.9 |
| All other | <u>47.4</u> | <u>40.3</u> | <u>43.5</u> |
| United States | 124.2 | 115.3 | 143.6 |
| | <u>percent of total</u> | | |
| Northeast | 20.7 | 20.4 | 20.0 |
| Lake States | 28.3 | 28.0 | 28.9 |
| Mountain and Pacific | 12.8 | 16.7 | 20.8 |
| All other | <u>38.2</u> | <u>34.9</u> | <u>30.3</u> |
| United States | 100.0 | 100.0 | 100.0 |

Source: ERS, USDA, Dairy Situation and Outlook.

Another way to look at some of the same data is to observe how the leading dairy states have changed in their shares of total milk production over successive ten year spans (Table 2). The top five states in 1986 provided 52 percent of the national total, up from 45.4 percent in 1966. The second group of five states, ranked sixth through tenth, have changed somewhat over time with Washington moving into the top ten only recently. As a separate group, they make up less of the national total than they did 20 years ago. Shifts out of dairying in the Corn Belt areas of Minnesota, Iowa, Michigan, and Ohio are quite evident when looking at county data from these states. Concentration of production on specialized dairy farms continues wherever dairy farming is an important enterprise.

Table 2. MILK PRODUCTION IN LEADING STATES
Proportion of United States Total, 1966, 1976, 1986

| Leading dairy states 1986 | Proportion of U.S. production | | | Total milk production, 1986 |
|------------------------------|----------------------------------|-------|-------|--------------------------------|
| | 1966 | 1976 | 1986 | |
| | <u>percent of total</u> | | | <u>billion lbs</u> |
| 1. Wisconsin | 15.1 | 16.9 | 17.5 | 25.2 |
| 2. California | 7.2 | 9.7 | 11.9 | 17.2 |
| 3. New York | 8.8 | 8.5 | 8.1 | 11.7 |
| 4. Minnesota | 8.4 | 7.6 | 7.4 | 10.6 |
| 5. Pennsylvania | 5.9 | 6.2 | 7.1 | 10.2 |
| Top five states | 45.4 | 48.9 | 52.0 | 74.9 |
| 6. Michigan | 4.3 | 3.8 | 3.7 | 5.4 |
| 7. Ohio | 4.1 | 3.7 | 3.4 | 4.9 |
| 8. Texas | 2.4 | 2.8 | 2.9 | 4.1 |
| 9. Iowa | 4.7 | 3.3 | 2.7 | 3.9 |
| 10. Washington | 1.7 | 2.0 | 2.6 | 3.8 |
| Top ten states | 62.6 | 64.5 | 67.3 | 97.0 |
| Other 40 states | 37.4 | 35.5 | 32.7 | 47.1 |
| United States | 100.0 | 100.0 | 100.0 | 144.1 |

Source: USDA, Milk Production.

There are two primary reasons why shifts in milk production like these have occurred in the past and are likely to continue in the future. One is that dairying has not been as profitable as some other alternatives in the locations where farms have ceased milk production. In some cases, off-farm jobs have provided a better alternative. In others, it may have been more profitable to shift to a corn-hog operation or to crop farming or some other combination of enterprises. A second major reason has been the inability of a number of dairy producers to breakeven with the buildings, technology and land resources available to them. In many cases, a portion of these land resources and the buildings are no longer used for any type of agricultural production. The best of the cropland will likely have been sold or rented to a nearby dairyman.

Regional Differences in Production Costs

One way to look at competitiveness between regions is through examination of the annual USDA estimates of average

milk production costs. The national averages for 1984-86 are presented in Table 3. Between 1984 and 1986, cash receipts per cwt. of milk dropped more than \$1.00. This drop in receipts has been met by reducing cash expenses by \$1.46 per cwt. so that the net difference between cash receipts and expenses has increased modestly on the average.

Reductions in costs were achieved by lowering expenses for feed, interest, and a number of other items. This was a period when prices of feed, gasoline, and fertilizer actually decreased; interest rates fell as well. In contrast, milk prices in 1988 are expected to decrease while the prices of most of the inputs used by dairymen will increase so that margins are expected to narrow.

Table 3.

MILK PRODUCTION COSTS PER CWT
USDA Estimates, United States, 1984-86

| Description | 1984 | 1985 | 1986 |
|--|----------------|----------------|----------------|
| - returns per cwt - | | | |
| <u>Cash Receipts</u> | | | |
| Milk (per cwt) | \$13.38 | \$12.64 | \$12.42 |
| Cull cows, calves, and replacements | <u>1.07</u> | <u>.99</u> | <u>.94</u> |
| Total | <u>\$14.45</u> | <u>\$13.63</u> | <u>\$13.36</u> |
| <u>Cash Expenses</u> | | | |
| Concentrate feed | | | |
| Other feed | 3.47 | 3.10 | 3.16 |
| Hired labor | 1.44 | 1.30 | 1.17 |
| Machinery, building repairs, fuel, electricity | .91 | .90 | .88 |
| Dairy assessment | .70 | .69 | .57 |
| Milk hauling | .50 | .13 | .36 |
| All other variable expenses | .34 | .34 | .33 |
| Total variable expenses | <u>.71</u> | <u>.69</u> | <u>.67</u> |
| Fixed Expenses | \$ 8.07 | \$ 7.15 | \$ 7.14 |
| General farm overhead | | | |
| Taxes and insurance | .60 | .50 | .48 |
| Interest | .34 | .34 | .32 |
| Total cash expenses | <u>1.63</u> | <u>1.42</u> | <u>1.24</u> |
| | <u>\$10.64</u> | <u>\$ 9.41</u> | <u>\$ 9.18</u> |
| - net returns per cwt - | | | |
| Receipts less cash expenses | \$ 3.81 | \$ 4.22 | \$ 4.18 |
| Capital replacement (depreciation) | <u>1.56</u> | <u>1.41</u> | <u>1.46</u> |
| Net difference | <u>\$ 2.25</u> | <u>\$ 2.71</u> | <u>\$ 2.72</u> |

Source: McElroy, B. and J. Johnson. "Economic Indicators of the Farm Sector, Costs of Production, 1986," ERS, USDA, ECIFS6-1, November 1987.

A comparison of average production costs in three major dairy regions for 1986 is presented in Table 4. Results for the Northeast, the Upper Midwest (Michigan, Wisconsin, and Minnesota), and the Pacific (California and Washington) indicate some important differences in the structure of costs and returns. Northeast dairy producers had a \$0.33 per cwt. advantage in returns over the Upper Midwest and a \$1.08 advantage over the Pacific region. The rank order differences in returns per cwt among the three regions has held true during most of the 1980s. The advantage of the Northeast over the Midwest reflects both fluid utilization and transportation for manufactured products. The Pacific region price for Class 4 (manufactured products) milk averaged more than \$.50 less than the Minnesota-Wisconsin (Class 3) price during 1986. It seems likely that such a differential will continue in the short run.

Table 4. REGIONAL COMPARISONS OF MILK PRODUCTION COSTS PER CWT
Northeast, Upper Midwest, and Pacific, 1986

| Description | Northeast | Upper Midwest | Pacific |
|--|---------------------|------------------|----------------|
| | - returns per cwt - | | |
| <u>Cash Receipts</u> | \$12.72 | \$12.15 | \$11.83 |
| Milk | <u>.89</u> | <u>1.13</u> | <u>.70</u> |
| Cull cows, calves, and replacements | | | |
| Total | <u>\$13.61</u> | <u>\$13.28</u> | <u>\$12.53</u> |
| <u>Cash Expenses</u> | 3.30 | 2.85 | 2.95 |
| Concentrate feed | .93 | 1.00 | 2.00 |
| Other feed | 1.15 | .64 | .93 |
| Hired labor | .56 | .60 | .48 |
| Machinery, building repairs, fuel, electricity | .36 | .36 | .36 |
| Dairy assessment | .36 | .22 | .29 |
| Milk hauling | <u>.72</u> | <u>.65</u> | <u>.60</u> |
| All other variable expenses | | | |
| Total variable expenses | \$ 7.38 | \$ 6.32 | \$ 7.61 |
| <u>Fixed Expenses</u> | .53 | .55 | .29 |
| General farm overhead | .36 | .46 | .14 |
| Taxes and insurance | <u>.84</u> | <u>1.70</u> | <u>.88</u> |
| Interest | | | |
| Total cash expenses | <u>\$ 9.11</u> | <u>\$ 9.03</u> | <u>\$ 8.92</u> |
| Receipts less cash expenses | \$ 4.50 | \$ 4.25 | \$ 3.61 |
| Capital replacement (depreciation) | <u>1.49</u> | <u>1.72</u> | <u>.68</u> |
| Net difference | <u>\$ 3.01</u> | <u>\$ 2.53</u> | <u>\$ 2.93</u> |

Source: McElroy, B. and J. Johnson. "Economic Indicators of the Farm Sector, Costs of Production, 1986," ERS, USDA, ECIFS6-1, November 1987.

Total cash expenses per cwt. for the three regions are quite similar, only \$0.19 apart. There are striking differences, however, among some of the key items. The cost of feed per cwt. is least in the Upper Midwest and highest in the Pacific region. More of the forage and feed is produced on the farm in both the Northeast and the Upper Midwest. Hired labor is a bigger item in the Northeast; interest costs are substantially greater in the Upper Midwest reflecting larger debt loads per cow. Variable cash costs are lowest in the Upper Midwest, in part because family labor on these smaller farms provides most of that requirement.

When cash expenses are deducted from cash receipts, the largest margin, \$4.50 per cwt., remains for the Northeast; the Upper Midwest is next some \$0.25 behind. At the next stage, when a charge for capital replacement is deducted, the rank order changes. Now the Northeast and Pacific are much closer together and the Upper Midwest has the smallest net margin remaining. It is here that the differences in size of enterprise among the regions affects the results more directly. The average farm in the Upper Midwest is smaller than in the Northeast and so has a somewhat greater capital replacement charge per unit. The very large farms of the Pacific spread their fixed costs over many more units and gain in the ranking accordingly.

Costs and returns from milk production are calculated annually by the USDA for six different production regions. A comparison of three different methods of calculating net returns per cwt. for these regions are presented in Table 5. In terms of the simple difference between cash receipts and expenses, the Northeast, Upper Midwest and Southern Plains (Texas) are the top three in descending order with the first two holding the same positions for three successive years. The Southern Plains replaced Appalachia in third position in 1986.

Table 5. REGIONAL COMPARISONS OF NET RETURNS PER CWT FOR MILK PRODUCTION
USDA Estimates, United States, 1986

| Region | Receipts less cash expenses | Capital replacement | Receipts less cash expenses and replacement | Residual returns to management and risk |
|-----------------|-----------------------------------|------------------------|--|--|
| | - dollars per cwt - | | | |
| Northeast | 4.50 | 1.49 | 3.01 | 1.47 |
| Upper Midwest | 4.25 | 1.72 | 2.53 | 1.54 |
| Southern Plains | 4.17 | 1.04 | 3.13 | 3.21 |
| Corn Belt | 3.97 | 1.69 | 2.28 | 0.49 |
| Appalachia | 3.64 | 1.36 | 2.28 | 1.27 |
| Pacific | 3.61 | .68 | 2.93 | 3.10 |
| United States | 4.18 | 1.46 | 2.72 | 1.66 |

Source: ERS, USDA, ECIFS6-1.

When capital replacement costs are deducted from receipts less cash expenses, the rank order is changed with the Southern Plains first, the Northeast second, and the Pacific region third. Differences among these three are small. The final calculation in Table 5 is described as a residual return to management and risk. USDA has estimated a charge for the use of family labor and capital at conservative market rates and then deducted it from returns along with all the other items of expense. The procedure charges all capital, regardless of the source, at a relatively low rate of interest. It is for this reason and the fact that little family labor is involved in the relatively large dairy operations in the Southern Plains and Pacific, that in these two cases residual returns to risk and management are computed to be larger than the measure, receipts less cash expenses and replacement.

Because all three of these different methods of ranking the competitiveness of different dairy regions in the United States are sometimes presented, it is useful to at least see how and why they differ. The first measure, receipts less cash expenses, really indicates how much is left per cwt. to the operator and his family as a return for the use of their resources. It is the cash margin left to cover living expenses, principal payments on debt, and returns to family labor and owned capital. It is a cash flow concept in which principal payment on debt and living expenses have not been deducted. When capital replacement or depreciation is taken into account, differences in economies of size are reflected in the results. The number of assumptions required to make the calculations for the residual returns for management and risk make this measure much more subject to question about comparability of the results for the different regions.

In summary, this review of production cost data indicates that the two long-time, specialized dairy regions, the Northeast and the Upper Midwest, are able to compete on the basis of both variable costs per cwt. and cash expenses per cwt. with Texas, California and Washington producers. Average costs are similar even though the typical farms in the Southern Plains and the Pacific are much larger. But this also means that the average producer in the traditional dairy areas in the North is receiving less for the use of his labor and owned capital than he would like or the market would require if all of it were purchased.

Competitiveness Within a State or Region

In many respects, it is easier to talk about competitiveness with other states or regions than to think seriously about competing with one's neighbors, particularly some of whom are long time neighbors or friends. In a large and open market like the United States, staying in business profitably means not only beating out some of the big dry lot dairies in California but also someone else who may not live very far away. If in the next ten years rates of milk production per

cow increase much more rapidly than milk consumption per capita in this country, as nearly everyone agrees will be the case, we will have less dairy cows and fewer dairymen.

The following list is a first cut at a set of suggestions for milk producers to consider in their efforts to remain competitive in this kind of environment:

1. Have a large enough business so that the major economies of size and scale can be obtained. In the Northeast, most of this is currently possible when 100-150 cows are being milked in loose housing with a milking parlor.
2. Be located in an area where there are enough efficient producers so that costs of assembly are minimized, where farm services can be supported profitably, and where dairy production is recognized as important to the local economy and is respected by local government.
3. Produce or have in place a system to obtain a consistent supply of high-quality forages, both corn silage and early-cut hay or hay-crop silage. These are fundamental ingredients for low cost milk production in most dairy areas of the world.
4. Exercise cost control and study business performance using farm records on a regular basis. Comparative analysis, especially looking at current records relative to previous years' performance at the same period of the year, is essential in understanding change and recognizing potential problems before they become serious.
5. Give labor management priority and build some performance incentives into your system wherever possible. Labor management skills can be developed like any others; listening is an important component of that process.
6. Recognize the growing importance of society's interest in the environment in such issues as manure management and handling decisions, runoff problems, and the use of agricultural chemicals.
7. Take stock of all the resources you are working with:--the soils, buildings, milking facilities, cows, labor available, and your own management abilities and have a plan for their use and development. Communicate with someone outside the business on a regular basis about operations, finance, and other business matters.

8. Build on the strong points in your business and the resources you control. Recognize the weak points and contain them; work on the issues where you can see how to make progress.

How large a herd to compete? This question continues to be raised in one way or another whenever dairymen talk about the future of the dairy industry. Most studies either summarizing farm account data or based on budgets established for representative farms using current technology show that important reductions in costs occur as herd size increases up to 100-150 cows. After that point, most of the cost economies based on spreading management, family labor, and fixed capital over more units of production occurs at a much slower rate. An example of this kind of evidence is provided by data from the New York Dairy Farm Business Management Summary for 1986 (Table 6).

Table 6. FARM COST OF PRODUCING MILK BY HERD SIZE
414 New York Dairy Farms, 1986

| Number of cows | Number of farms | Milk sold per cow - lbs. - | Cost per cwt | |
|----------------|-----------------|-------------------------------|-------------------------------|-------------|
| | | | Cash operating - per cwt - | Total costs |
| Under 40 | 32 | 14,525 | \$9.27 | \$16.34 |
| 40 - 54 | 87 | 15,180 | 9.77 | 15.40 |
| 55 - 69 | 76 | 15,825 | 9.14 | 14.75 |
| 70 - 84 | 60 | 15,605 | 9.56 | 14.57 |
| 85 - 99 | 46 | 15,840 | 9.45 | 14.29 |
| 100 - 149 | 62 | 16,055 | 9.17 | 13.65 |
| 150 - 199 | 22 | 15,199 | 9.82 | 13.71 |
| 200 - 249 | 10 | 16,552 | 9.93 | 13.26 |
| 250 and over | 19 | 18,593 | 9.54 | 12.37 |

Source: A.E. Res. 87-20, p. 25.

Two major points emerge from study of Table 6. Cash operating expenses per cwt. of milk sold do not differ significantly on the basis of herd size. While there is substantial variability from farm to farm within each of the size categories, size of herd by itself does not reduce this category of expense. When total costs per cwt., however, are considered, which includes charges for operator and family labor, depreciation, interest on all capital, and a charge for management, costs decrease as size increases. This same kind of result has been duplicated in many other studies. Usually when an average for a particular size category is calculated, there are lots of

differences in total costs per cwt. among them. Yet, when one looks at the most efficient farmers in each of the size classes, most of the size economies have been achieved by those with between 100 and 150 cows.

Another way to look at the size question is with a scatter diagram comparing all except ownership costs per cwt. against milk sold per cow for individual size categories. Such scatter diagrams emphasize the tremendous variability from farm to farm within any one size grouping. This is particularly true for the cooperating farms in the New York Farm Business Management Summary with 70-99 cows. There were 106 farms in this category with substantial dispersion in both milk sold per cow and all but ownership costs per cwt. (Figure 1). If one concentrates attention on the farms who have achieved the lowest costs, those at \$10.00 per cwt or less, there is no clear evidence that costs per cwt. either decrease or increase as milk sold per cow gets larger. The net margin between gross returns and costs for these low cost operators in this size category holds relatively steady as milk sold per cow increases.

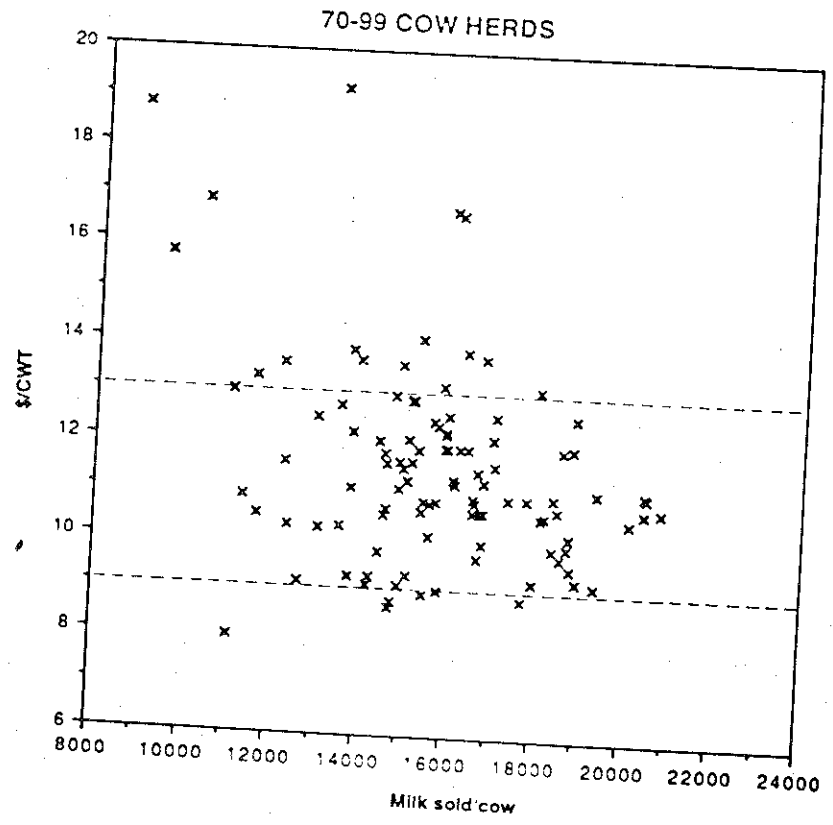


FIGURE 1. RELATIONSHIP BETWEEN MILK SOLD PER COW AND COST PER CWT. 70-99 Cow Herds, 1986

When a comparison is made with a second scatter diagram for the group of farms with 100-149 cows where all except ownership costs per cwt. are related to milk sold per cow, there are some important changes (Figure 2). The extremes are different. A smaller proportion of the farmers in Figure 2 have costs above \$13.00 per cwt. There are also a higher proportion of dairymen with costs below \$9.00 per cwt. There is a clustering of observations between \$9.00 and \$13.00 per cwt. with milk sold per cow of 15,000-18,000 lbs. per cow. There seems to be some association of reduced costs as milk sold per cow increases. Variability from farm to farm remains large.

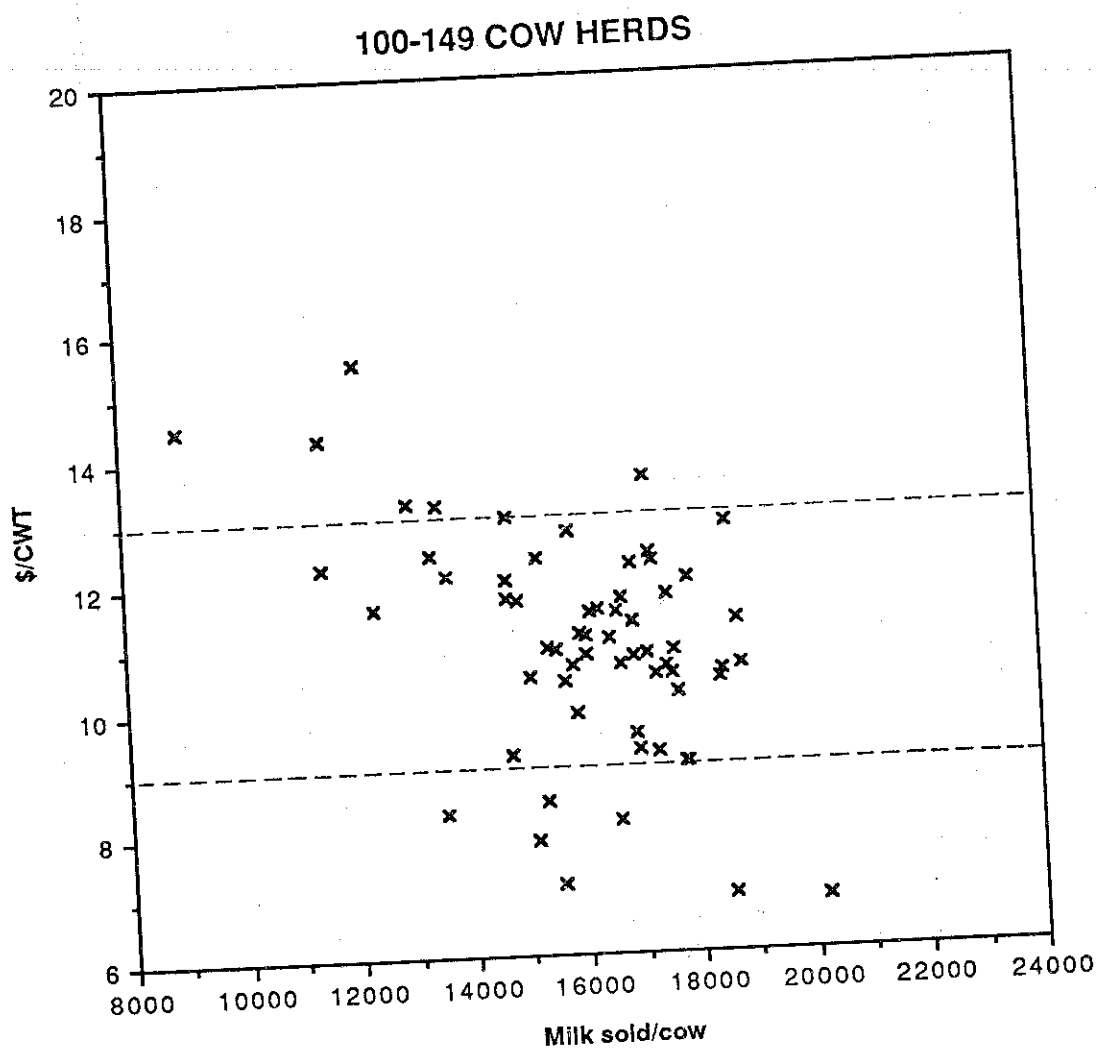


FIGURE 2. RELATIONSHIP BETWEEN MILK SOLD PER COW AND COST PER CWT. 100-149 Cow Herds, 1986

Finally, if one looks at a scatter diagram for all the farms with 200 cows or more, a relatively small sample with only 29 observations, variability is considerably reduced (Figure 3). Costs are concentrated for the majority of farms between \$9.00 and \$13.00 per cwt. None of these farms sold less than 14,000 lbs. per cow. There is no tendency to decrease costs per cwt. as milk sold per cow increases. A number of farmers with 100-149 cows (Figure 2) achieved lower costs per cwt. with equally high milk sales per cow.

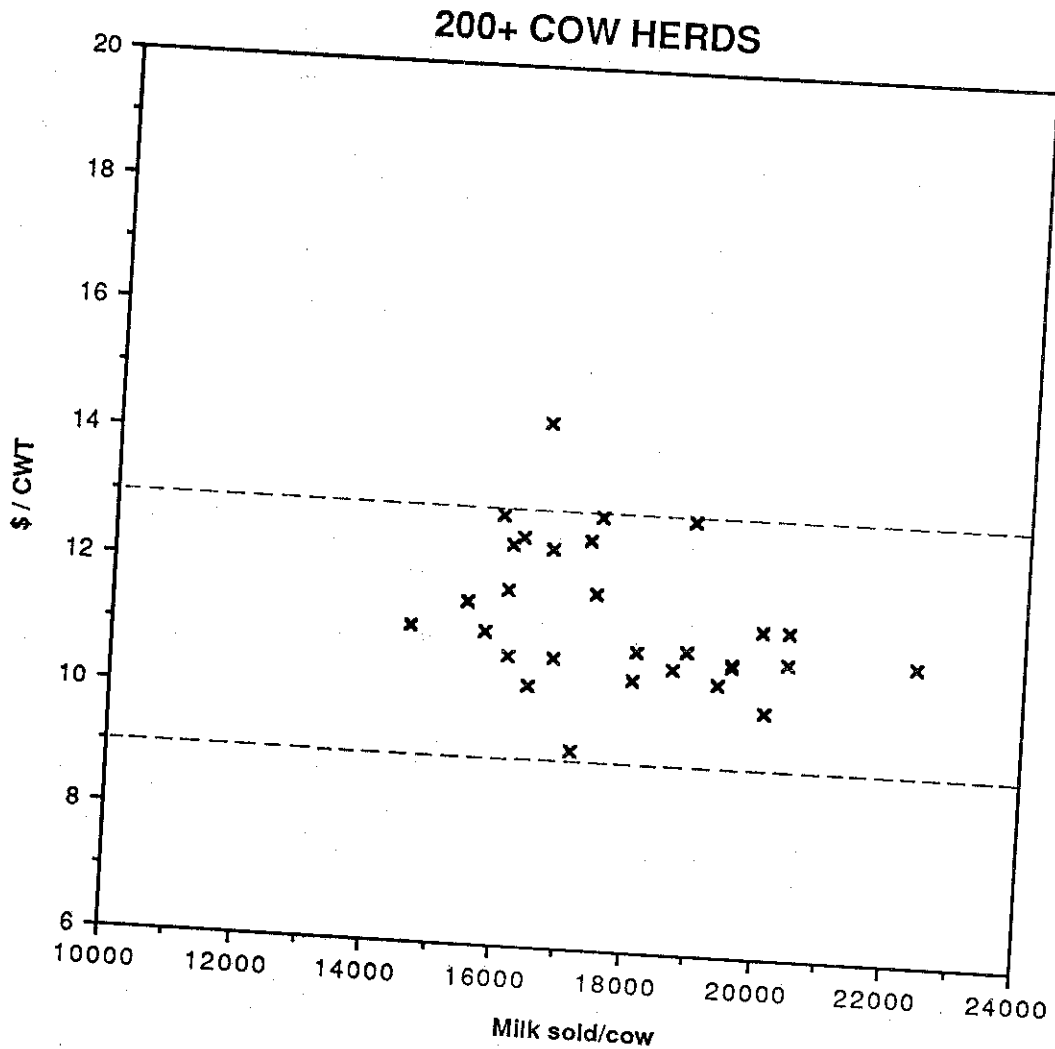


FIGURE 3. RELATIONSHIP BETWEEN MILK SOLD PER COW AND COST PER CWT. 200 + Cow Herds, 1986

Careful study of these three scatter diagrams emphasizes the substantial variability that exists from farm to farm in any one size category, even though prices received and paid were very similar and technology employed was relatively consistent within size groupings. Some of the lowest costs per cwt. were achieved by farmers with 100-149 cows and milk sales between 14,000 and 18,000 pounds per cow. Variability in costs decreased as size of herd increased.

Location with Other Dairymen. If a dairy region is to remain competitive, the costs of servicing farms in terms of delivering inputs, providing needed services, and picking up milk should be as small as possible. Everyone in the dairy business needs the opportunity to make a profit including those who sell to farmers and those who buy and process milk. There are obvious advantages in efficiency when production is specialized and concentrated within relatively small geographic areas. When individual farms are scattered, located on poor roads, or outside normal commercial channels, service costs increase rapidly. In thinking about the capacity of an individual farm business to compete with others in the future, location of the farm in relation to other successful businesses is an important consideration.

Forage Production and Sources of Supply. Dairy cows are efficient converters of forage into a high value product -- milk. A low cost, high quality source of forage is an essential base on which dairy production is built. In the Northeast and Upper Midwest, most of the forage used to produce milk is harvested on the same farm where the cows are milked. Dry lot dairies in the South and West succeed in part because they have contracted for assured supplies of alfalfa and in some cases, corn silage, from nearby irrigated crop farms. The production of high quality forage is one of the fundamental keys to success for most dairy farms in the North. Those who insure that their cows have access to early cut, high protein silage and hay have made one of the major steps toward maintaining their competitive position.

Cost Control and Record Analysis. Looking at records and accounts is not an activity which gets sufficient priority on many farms. In a time when milk prices are expected to fall and costs are rising, cash flow analysis and cost control are necessities. Comparison with one's own past experience is one of the best sources of information available as is true for nearly all other kinds of successful businesses. Time set aside for this kind of management activity is as crucial as time for pregnancy checks, analysis of rations, and reproductive performance. When cash flow problems seem likely to require discussions with one's source of credit, initiative at the farm to deal with the perceived problem will usually save both time and money.

Labor Management. Whether the labor force consists of just one other person besides the operator, or a more complex group of full-time, part-time, and hourly workers, labor management is basic to any successful operation. Everyone who works in the business should take pride in the way they do their own work and in the performance of their colleagues and the business as a whole. Everyone needs to know what his job is and what is expected. There should always be someone to report to; the chain of command should be clear. Incentives, whether in the form of words of praise or cash or both, should be a part of the program. It takes time to develop labor management skills and to build good working relationships with hired workers. It's another of the fundamentals that deserves continued attention.

The Environment and Your Neighbors. Farmers are a minority, even in most rural communities. Living in harmony with your neighbors is a part of doing business both now and in the future. More and more attention is being directed to the use of all kinds of chemicals and their impact on the environment. If you are in a community with many other specialized dairy farmers, manure management will be a matter of interest and concern not only for individual farmers but also for neighboring rural residents, and at times for individuals downstream on local streams and rivers. Issues related to environmental pollution will not go away. Efforts to build understanding of your problems and efforts to solve them with other residents and businesses in your community will be increasingly important to dairymen. Attractive farmsteads, and neatly kept fields are an item of pride to your fellow citizens. Efforts to respect their concerns about chemicals in the water supply and to minimize odors will make a difference.

A Long Range Plan for the Business. Planning and evaluation are parts of every manager's job whether they are written down systematically or made through informal discussions with a partner or part owner of the business. Increasingly, it is useful to have made a conscious decision about the form of business arrangement used, the kinds of insurance coverage including health and accident plans that are in place, the wills that are drawn, and financial arrangements that have been developed. Communication with individuals outside the business who have expertise, ideas and suggestions for business organization may be as fundamental to business survival and success as are herd health checks by a consulting veterinarian or protein and fiber analyses of forage samples by a feed supplier. Consultants do not provide free services. They are paid for either indirectly in the price of inputs you purchase or directly through fees or insurance premiums. In a specialized, competitive world, they may provide pieces of information or services that are essential to the operation of your business. Some effort to use these talents selectively is important as well.

Summary Comment

This paper has sought to look at what it takes to be competitive in the dairy business. Emphasis has been given to economic issues. There is world "surplus" of dairy products; that is, more dairy products are being produced than can be consumed by people who have money to buy them. Selling surplus dairy products on international markets is not a viable option for American dairy farmers. The important questions in the United States are which regions are going to continue in milk production profitably and which farmers within those regions will continue in business.

In our national markets, low cost, efficient producers will have the competitive edge. The size of business that allows low cost production depends very much on the resources, technology, and management skills available to individual dairymen. Under conditions commonly found in the Northeast and the Upper Midwest, many of the size economies are obtained now by the time herd size reaches 100-150 cows. Larger herds may make more net returns but not primarily because of added efficiencies per unit of production. In contrast, the dry lot dairies of the South and West gain significant economies with herd sizes up to 1000 or more.

The challenge for dairymen in the remaining 12 years of this century will be to integrate the continuing advances in production technology into existing businesses and to make the best use possible of available physical resources. Integrating technical and business management skills will be crucial. Neither one by itself will insure that a business will remain competitive. Decisions on location relative to other dairymen, on production systems for forages, or on labor management practices may require quite different answers or priorities on farms within the same region. Low cost production of high quality milk is still the fundamental requirement for success in the dairy business. This can be accomplished with quite different combinations of resources. It remains basic to long-run competitiveness.