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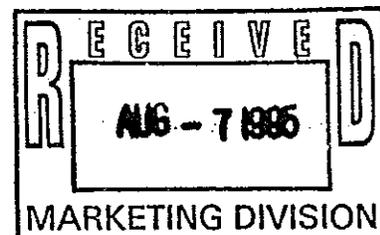
Dairy Futures Hedging: A Working Model for Forward Contracting Milk Production from Milk Producers

Final Report prepared by Roger Blimling

Original intent of project and perceived benefit to Wisconsin agriculture

The original intent of this project was to establish a pilot program whereby Wisconsin milk producers could forward contract their milk production with a dairy plant. The dairy plant would use the futures market to protect itself from the price risk volatility. The ultimate objective of this new market technology was to create what was believed to be the first such pricing system in current use in the United States, one that would allow the Wisconsin dairy industry to be a leader in giving profitable marketing alternatives to producers and dairies alike. Prior to this pilot program, a dairy farmer was told during the middle of one month what his milk was worth for the preceding month. The dairy farmer had no choices in selling his milk production. This was not a problem when the government supported milk prices at profit levels; however, since the early 1980's the government has been steadily reducing support prices.

The project was to be active, live, and ongoing for one year. In this project the dairy plant, Alto Dairy Cooperative, expected to contract a minimum of 800,000 lb. of milk per month for the months of August 1994 through July 1995, with the milk hedged by the dairy plant to manage risk. Both Alto Dairy Coop and the farmers participating in the project were to be trained in the use of markets.



Commercial application of new practices related to agricultural products

The commercial hedging program was successfully implemented by Alto Dairy. This price risk management tool allowed Alto to set milk prices for as much as nine months in advance for the program participants. In addition to forward contracting, Alto Dairy also uses the commercial hedging program to manage price risk for its product inventory.

This commercial hedging program can be implemented by all of the other dairy plants in the State to provide a price risk management tool for their producers and for their inventories. This has in fact already happened. Swiss Valley Farms, a dairy cooperative located in Davenport, Iowa, has members in the State of Wisconsin and is starting a forward contracting program for its members. This program is based on the model developed at Alto Dairy.

Improvement of the competitive position of Wisconsin's agricultural industry

There are two ways to become more competitive in a marketplace. One is to lower cost of production, and the other is to market the products more effectively. The forward contracting program allows the dairy producer to take advantage of profitable prices when they present themselves. Although this program does not guarantee higher prices, it does provide an opportunity for more financial stability, thus enhancing competitiveness.

Efficient use of agricultural resources

An objective of the forward contracting program was to allow producers to lock in prices for milk in advance at profitable levels. One of the benefits of the program was expected to be that dairy farmers of all sizes could participate. This has been the case. The pilot program had participants from the largest to the smallest patrons of Alto Dairy.

Thus, this forward contracting tool can assist the smaller dairymen in securing profitable sales in advance. This profitability may allow the small dairy farmer the ability to stay on the farm and to more efficiently use the assets of the farm.

Evaluation of the results and benefits of the project

The pilot program for forward contracting was a success. Initial enrollment was capped at fifty-four patrons. In February of 1995, Alto felt good enough about the program to open the enrollment to other members. There were more than 250 contracts written over the course of the year. Contracts ranged in size from 10,000 lbs. to 250,000 lbs. Over seven million pounds of milk were contracted. Contracting started August 1, 1994, for milk produced and delivered in September 1994. Milk was priced out as far as ten months in advance. Initially milk bids were given out in person over the phone. A voice mail line was set up later for patrons to have direct access to bids.

The commercial hedging program successfully protected Alto from the price risk of the forward contracted milk. The milk was hedged in the cheddar cheese futures when Alto took the price risk from the farmer. Hedges were lifted when the milk was delivered and made into and sold as cheese.

Description of information or educational materials developed

Patron education came through meetings. There was an introductory meeting held in July 1994 at Alto Dairy to explain the pilot forward contracting program, how and why it would work, and the policies and procedures associated with the program.

There were two education and training meetings held in the fall, one in Green Bay, Wisconsin, and the other in Alto, Wisconsin. The presenters were Dr. Bob Cropp from the University of Wisconsin, Jeff Keye from UW Extension, Roger Blimling from Blimling and Associates, and Larry Lemmenes and Don

Desjarlais from Alto Dairy. Topics covered were the dairy market futures, cost of production, and strategies for forward contracting. Questions were also answered.

General education around the State came through numerous speeches and presentations given to cooperative groups, extension groups, and adult education classes, as well as to the Wisconsin Association of Vocational Agriculture Instructors Inc. The pilot program also gained much national attention. Speeches and presentations were given at such industry meetings as the National Milk Producers Convention, the International Dairy Foods Forum, CFTC's Summit on Risk Management, the National Agri-Marketing Association, and the Graduate Institute of Cooperative Leadership.

Future projections resulting from receipt of grant funds

There are over 27,000 dairy farmers in the State of Wisconsin. Until this pilot program started, no one had the opportunity to sell his or her milk in advance. It is my vision that within a few years, every dairy farmer in the State of Wisconsin will have the opportunity to forward contract their milk in advance. This ability to forward contract will have more importance tomorrow because of the implications of the GATT agreement and because of the new political climate in Washington D.C. If price supports are lowered or eliminated, I think that price volatility and uncertainty will increase. Therefore, the need for a method to reduce price risk will become more important.

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DAIRY FUTURES HEDGING: A WORKING MODEL FOR FORWARD CONTRACTING MILK PRODUCTION FROM MILK PRODUCERS

SUMMARY

The dairy farm is where the asset (wealth) for the dairy industry is created.

It is estimated that 10 to 12 billion dollars of Wisconsin's economy comes from the dairy industry. "Dairying has one of the highest if not the highest economic multiplier of all farm commodities." (Dr. Bob Crop UWM)

The current price support level is below the cost of production of many producers.

Dairy farmers have no means of protection against falling prices other than through the futures markets.

The futures markets are based on manufactured products rather than on fluid milk. Delivery by producers is not possible.

Today the producers and the end user carry the majority of the price risk.

A viable futures market is necessary to transfer price risk from producers to speculators.

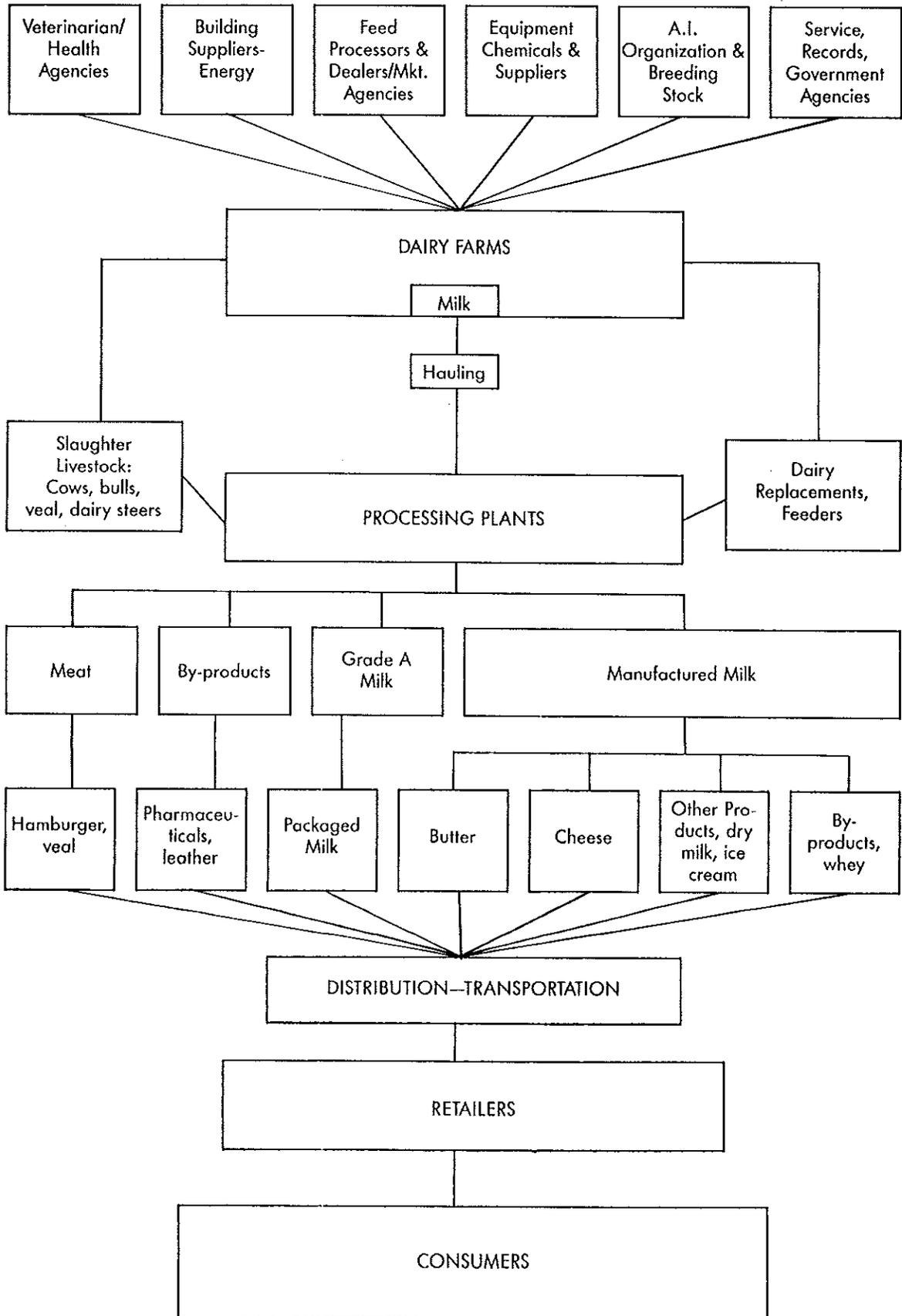
Today the dairy futures markets are very thinly traded and lack liquidity.

Commercial activity is necessary for the survival of the dairy futures markets.

CASH FORWARD CONTRACTING CAN:

provide a stabilizing influence on dairy farm income
benefit small producers as well as larger producers
improve the competitive position of Wisconsin
provide liquidity to the futures markets

THE WISCONSIN DAIRY INDUSTRY



PROCEEDINGS
Western Dairy Conference
Bismark, North Dakota / March 11, 1994

The Impact of Dairying On Rural Development

Bob Cropp

Director, Center for Cooperatives
and Dairy Marketing & Policy Specialist
Department of Agricultural Economics
University of Wisconsin, Madison

It is indeed a pleasure to be invited to speak at the Western Dairy Conference. My subject—*The Impact of Dairying on Rural Development*—is a hot topic in my home state, Wisconsin. As you may know, Wisconsin's dairy industry is currently going through some major structural changes. Dairy farm numbers, milk cow numbers, milk production, and milk plant numbers are all declining, and they're declining at record levels. Rural communities and businesses serving dairying are being severely impacted by these structural changes. Because dairying is so important to the state, the Governor of Wisconsin, in March 1993, initiated "Wisconsin Dairy 2020," a task force of government, university, agribusinesses, and dairy farmers directed at protecting the competitiveness and profitability of the state's dairy industry.

The Dairy Industry Defined: Before we talk about the impact of dairying on rural development, it may help to describe the various components of the dairy industry. Today, as always, dairying includes much more than milk cows and dairy farms. In addition to producing milk, most dairy farmers raise crops and dairy herd replacements. A lot of inputs and services go into producing milk, raising dairy herd replacements and growing crops. The milk must be transported, processed and packaged into beverage milk and/or numerous manufactured dairy products and dairy by-products. These products are then distributed and marketed through the various marketing channels. Besides the above-mentioned products, many dairy farms also produce meat; calves, dairy beef and cull dairy cows are all important parts of the nation's red meat supply. About a fourth of all beef for human consumption is supplied by the dairy industry. Like dairy products, this livestock must be transported, processed, packaged, marketed and distributed.

As can be seen from this discussion, dairying includes numerous activities, services and businesses that directly impact rural communities. Some of these businesses include:

A.I. Organizations	Governmental Agencies
Agricultural Credit	Livestock Dealers
Auto and Truck Dealers	Marketers/Distributors
Crop Protection Suppliers	Meat Processing Plants
Dairy Farms	Milk Processing Plants
Dairy Equipment Dealers	Record Keeping
Dairy Testing	Suppliers of other inputs
Farm Building Suppliers	Transportation
Farm Equipment Dealers	Utilities
Feed Processors/Distributors	Veterinarians

The Multiplier Effect: Dairying has one of the highest, if not the highest economic multiplier of all farm commodities. Why? Because of the many inputs and services required to produce crops to feed dairy cows, dairy herd replacements and dairy beef, and the transportation, processing, marketing, packaging and distribution components required of milk, dairy products, calves, culled cows and dairy beef. The multiplier for dairy is estimated at greater than 3. This means that for

every \$1 of gross dairy farm receipts, another \$3 or more is generated in the local or state economy. This multiplier effect is greater than that for most crops, and even greater than that for other types of livestock enterprises.

Why does dairying have a greater multiplier effect than most other types of farming enterprises? Because of the greater number and variety of inputs and services that dairying requires. For example, dairy farmers must use more specialized types of farm equipment than do crop farmers. Like crop farmers, dairy farmers need crop planting equipment and harvesting equipment. But dairy farmers also need forage harvesting equipment, manure handling equipment, and milking equipment—and all the services that go along with serving this equipment. Unlike crop farmers, dairy farmers must use a lot of electrical power to operate their specialized equipment, such as milking and feed-handling equipment. Finally, and again unlike crop farmers, dairy farmers must purchase feed, milking equipment supplies, and herd health products and services. The list goes on.

Of course dairy farmers are also consumers. They purchase food, clothing, appliances, cars, shoes, and furniture, as well as the numerous other consumer services provided by the community. When milk prices fall or dairy farmers are otherwise adversely affected by poor crops and feed supplies, their financial well-being suffers. Businesses in area communities are first to feel the impact.

Dairying clearly impacts almost all segments of rural communities where dairy farming is prevalent. When the number of dairy farms—and thus dairy farmers—declines, a loss in area jobs is likely to occur. ~~The businesses providing inputs and services to dairy farmers experience reduced business volume and in turn may require fewer employees.~~ In some communities a milk processing plant and a dairy cooperative may be important local employers. An area with declining milk production may find a milk plant or dairy cooperative closing and local people out of a job. In contrast, when milk plants located in rural communities expands operations (perhaps becoming more involved in value-added processing and packaging activities) employment opportunities in the community are usually expanded.

In 1992, U.S. dairy farmers sold \$19.85 billion worth of milk. Using a multiplier of 3, this generated almost \$60 billion in other economic activity for rural and state economies. The average gross farm income for U.S. dairy farmers as a group was \$159,779 in 1991.¹ This amount is equivalent to 5.3 wage earners with annual salaries of \$30,000. Cash expenses for these dairy farms averaged \$149,887, leaving average net cash farm income at \$31,000. After taking into consideration depreciation, a value for unpaid family labor, changes in inventory values, and nonmonetary income, net farm income averaged \$25,735. In summary, after spending nearly \$160,000 for farm production inputs and services (most purchased from local businesses), these dairy farm operations will have to spend a major share of their net farm income for family living. The magnitude of these expenditures further demonstrates the economic impact dairy farming and dairy farm families have on rural communities.

I can site examples of many rural Wisconsin communities that were once surrounded by successful dairy farms, and now few dairy farms remain. Unfortunately, for many of these communities, dairy farming or livestock production is the only or best use of the area's land resources. As a consequence, when dairying declines there may be no activity on these farms that can come close

¹Short, Sara and Mitchell, Morehart. April 1993. "Financial Conditions of Dairy Farms, 1991," pp. 22-29 in Dairy Situation and Outlook Yearbook. Washington, D.C.: United States Department of Agriculture, Economic Research Service.

to replacing the economic activity generated by dairying. In the Southeastern part of the state, land was highly productive and highly suited to continuous row crop production. Yet even here, when livestock numbers declined many businesses serving dairying were not insulated from economic decline. Meanwhile, in the state's Northern section land is not suited to continuous row crops. When the Conservation Reserve Program (CRP) came along, many of these Northern dairy farmers saw an opportunity to sell their cows—and because at the time their farms did not have high market values, and were not in great demand as rental acreage—these farmers then chose to sign up for CRP, in which the land is taken out of production. Thus, in this area there is no longer a need for feed supplies for livestock, and seed, fertilizer and machinery sales are also no longer needed. The area's next generation will have no opportunity to take over farming operations, and will have to search elsewhere for employment or farming opportunities. As a result local businesses will very likely experience a major loss of business volume, and some may close altogether. To continue with this scenario: the local machinery dealer goes out of business. Livestock numbers no longer will support a veterinarian. Farmers now have to drive further, some as far as 100 miles to find machinery parts and services. Milk plants experience increased milk procurement costs because the remaining dairy farms are more scattered and greater driving distances are required to get a load of milk. Eventually these plants may close and farmers will no longer have a nearby market for their milk.

As local businesses close, job opportunities diminish and young people leave. As mentioned earlier, area businesses suffer. In addition, community services deteriorate, including schools, police and fire protection, waste disposal, and so on. In many communities successful community development projects have attracted new businesses and branched out into other activities. In some rural communities the agricultural farm supply cooperative has become the center of these development projects. Many innovative agricultural cooperatives are branching out into nontraditional activities to provide consumer goods and services to the community, such as restaurants, hardware stores, appliance stores, day care centers, car parts shops, and others.

The importance of Dairying In Western States: Dairying is important to the economy of Western states. Table 1 (next page) shows the importance of dairying, measured as a percentage of total cash farm receipts, for each of the 10 states associated with the Western Dairy Conference.

Dairy is the number one source of cash farm receipts in the state of California and represents 14.3 percent of the state's total receipts.² Dairy ranks second as a source of farm income in Nevada and Utah, accounting for 15.8 percent and 22.9 percent of these state's total receipts, respectively. In Arizona, Idaho, Oregon and Washington, dairy ranks as the third most important source of farm receipts, accounting for between 9 and 15 percent of these state's total farm receipts. Dairying accounts for 4.6 percent of total farm receipts in Colorado, ranking fourth. Dairying ranks sixth in Montana and North Dakota, where it accounts for 4.6 percent and 3.8 percent of total farm receipts, respectively.

For most of these Western states cattle and calves are the primary source of farm receipts. In North Dakota wheat is the number one source; in Washington it is apples. Dairy ranks second behind cattle and calves as the source of our nation's cash farm receipts.

Dairying is clearly important in all Western states. As measured by increases in total milk production, dairying expanded for all 10 Western states during the 1982-1993 period, except in

²United States Department of Agriculture, Economic Research Service. "Ranking of States and Commodities by Cash Receipts, 1992." Statistical Bulletin No. 871. Washington, D.C.

TABLE 1
Dairy as a Percent of Total Receipts, 1992

STATE	Rank of Dairy	Dairy's % of Total	Dairy Receipts (mill. \$)	Source of First Receipts	Receipts (mill. \$)
United States	2	11.6	\$19,848	Cattle	\$37,882
Arizona	3	12.8	237	Cattle	581
California	1	14.3	2,608	Cattle	
Colorado	4	4.6	189	Cattle	2,526
Idaho	3	13.1	371	Cattle	721
Nevada	2	15.8	43	Cattle	150
Montana	6	2.4	42	Cattle	781
North Dakota	6	3.8	118	Wheat	1,295
Oregon	3	9.0	226	Cattle	392
Utah	2	22.9	170	Cattle	269
Washington	3	14.5	646	Apples	913

TABLE 2
Changes In Total Milk Production, Western States, 1982-1993

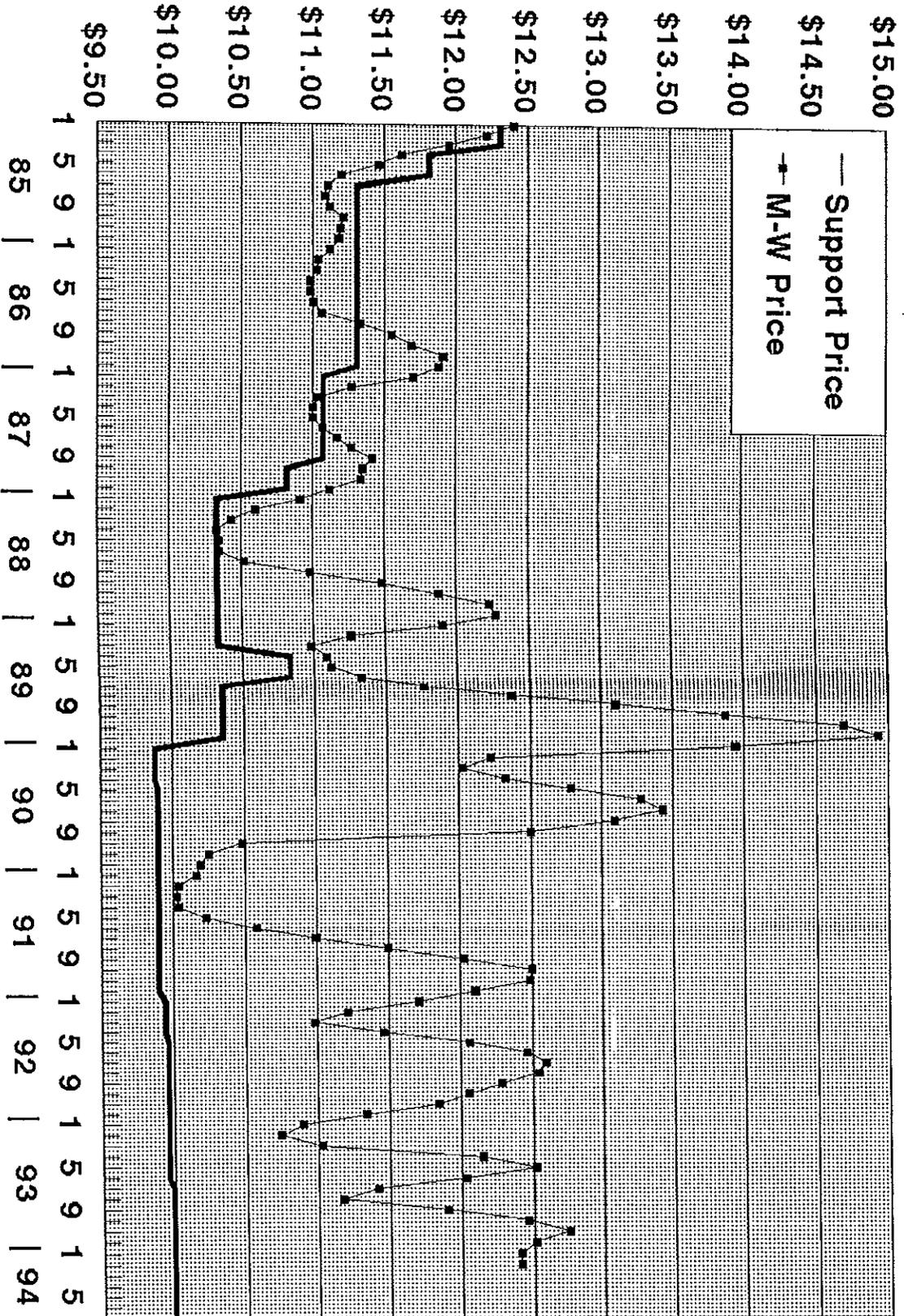
STATE	1992	1993	% Change
	---Billion Pounds---		
Arizona	1.2	1.9	+58
California	14.5	22.9	+58
Colorado	1.0	1.5	+50
Idaho	2.3	3.2	+39
Nevada	.2	.4	+100
Montana	.3	.3	0
North Dakota	1.0	.9	-10
Oregon	1.3	1.7	+31
Utah	1.2	1.3	+8
Washington	3.2	5.0	+56
United States	135.8	151.0	+11

Montana, where there was no change, and in North Dakota, where it declined 10 percent (Table 2). For some Western states—particularly Arizona, California, Colorado, Idaho, Nevada, Oregon and Washington—dairying has been on a strong expansion route and milk cows and milk production have been increasing. During 1982-1993, total milk production increased 31 percent in Oregon and doubled in Nevada. New dairy manufacturing plants are being constructed and cheese and other dairy products are being marketed nationally from these states. There is optimism about dairying in many of these states, and the expansion is viewed as an important source of increased economic activity. While for some of these states relative changes are large, they are still relatively small players in the total U.S. dairy industry. Nevertheless, expansion in dairying is viewed as important in each state. In contrast, it is important to note that North Dakota has experienced a 10 percent decline in dairying and is concerned about the future of many of the state's dairy farmers and the potential loss in economic activity. As a result, the optimism in dairying is not as strong in North Dakota as it is for some other states.

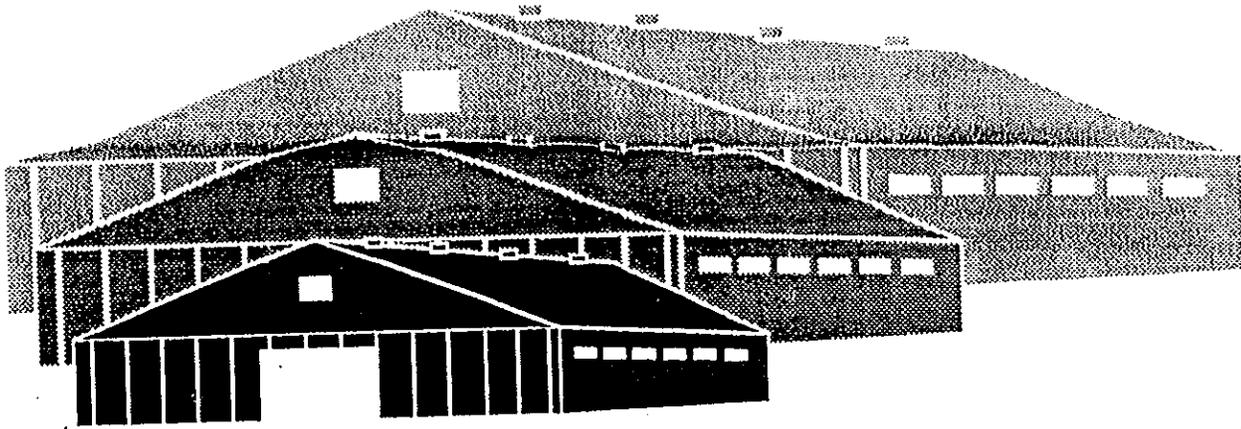
Summary: Dairying ranks only second to cattle and calf production as the most important source of total U.S. cash farm receipts. Dairying also ranks first, second or third as a source of farm receipts in most Western states. Because of its heavy demands for inputs, services, transportation, processing and packaging—not only for milk and dairy products, but for calves, cull cows and dairy beef—dairying has a greater economic multiplier than most other crop or livestock enterprises. Because the multiplier is estimated to exceed 3, the \$19.85 billion in cash farm milk receipts generates about \$60 billion in other economic activity, nationwide. Dairying is vital to the economic well-being of many rural communities and to states as a whole. When dairying declines, many rural communities are experiencing economic deterioration. And for those states experiencing dairy expansion, the extra economic activity is viewed as an important part of economic development.

M-W vs Support Price

Dollars Per Cwt.



The Business Side of Dairying



How to Manage a Growing Dairy Business

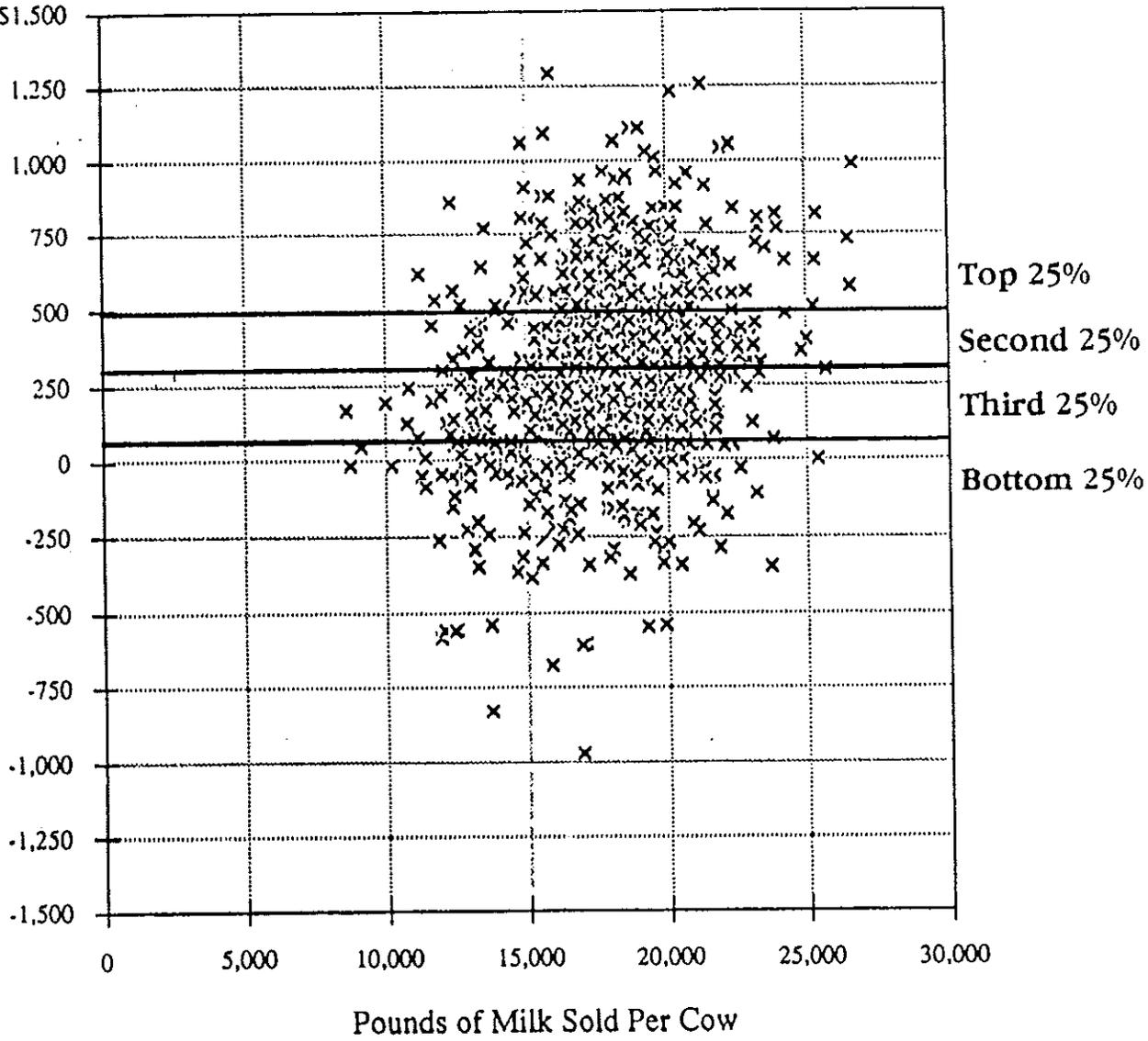
*Professional Dairy Producers' of Wisconsin
Annual Conference*

Don R. Rogers
Vice President
Farm Business Consultant
Farm Credit Bank of Springfield
March 1994



Profit Versus Milk Sold Per Cow

Profit Per Cow



789 Farms - Agrifax 1992 Northeast Dairy Region

Five Different Routes to Superior Dairy Profitability

In looking closely at the data for the 198 most profitable farms in the *Northeast Dairy Farm Summary*, it becomes increasingly apparent that **superior profitability is achieved in a variety of ways**. These might be thought of as *farm management styles* which usually reflect the personality of the farm business operator(s).

For purposes of this analysis, **5 fairly distinct operating styles** were identified. Each of the 198 farms in the Top Profit group was then classified into the most appropriate group based on its data. Selected averages for each of these groups is presented below. At the outset, it is important to recognize that despite some significant differences in characteristics and certain income/expense results, **all 5 groups had superior profitability compared to the average of all 789 farms in the sample**. So what's important is *how* they achieved it, not modest profitability differences among the 5 management styles.

Selected Dairy Farm Management Styles

	Good With Cows	Labor Efficient	Great Milk Price	Tight with a Buck	Utility Infielders
Average No. of Cows	131	172	116	131	80
Number of Farms	50	21	29	40	58
Net Earnings					
Per Farm	\$59,343	\$84,624	\$52,200	\$80,958	\$32,560
Per Cow	453	492	450	618	407
Per Cwt.	2.08	2.50	2.51	3.50	2.32
Expense Per Cow					
Total Adj. Oper.	\$3,008	\$2,598	\$2,752	\$2,280	\$2,340
Family Liv. & Tax	242	186	263	213	383
Total	3,250	2,784	3,015	2,493	2,723
Cost of Production					
Per Cwt.	12.01	11.42	12.84	10.22	12.64
Pounds					
Per cow	21,752	19,705	17,946	17,642	17,570
Per worker	654,768	1,092,198	630,613	627,802	577,311
Per crop acre	7,838	9,966	6,544	7,207	6,085
Per \$1,000 Assets	2,695	2,865	2,211	2,495	2,022
Price of Milk	\$13.77	\$13.77	\$14.96	\$13.58	\$13.72
Return on Equity	9.0%	12.3%	9.2%	13.0%	7.0%