

Dynamic Changes in the Dairy Market

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Leaders from all parts of the dairy industry are finding out that they have to get up every morning and try to put themselves out of business. They do it because if they do not, someone else will. This is not just because of the 1996 FAIR farm bill. They do it because in today's market, if they do not come up with a better dairy product or a better way of marketing that product, they will fall behind.

The dairy industry is becoming more competitive and more consumer oriented. Today, we are competing on a world wide basis and continued innovation in production techniques and product development and marketing are needed to keep the U.S. dairy industry at the forefront of world agriculture.

Consumers of today are accustomed to getting what they want and the industry must provide that or the customer will go somewhere else. One of the main changes we are seeing in the dairy industry is that we are becoming more market oriented and, thanks to the 1996 farm bill, we are assured that this trend will continue in the future.

I want to divide the discussion of the changes in dairy marketing into four areas: dairy farmers and their cooperatives; the Federal milk marketing order system; the processing sector; and a miscellaneous category including international markets, managing risks, and food safety.

Producers

The most recent figures show that production in 1996 is not increasing at the long term trend of 2 percent. On a daily basis, milk production declined during the first quarter of 1996. Because February had an extra day, year to date production was up slightly. Compared to 1995 production, only 19 states showed any increase. (Figure 1) High feed prices and low milk prices are having a significant impact on production. The largest percentage declines in production have been in the Southeast but other parts of the nation are also showing significant declines. Mississippi is down 10 percent while Iowa and Delaware are down 7 percent. Production in the West continues to increase, with Idaho and Arizona leading the way.

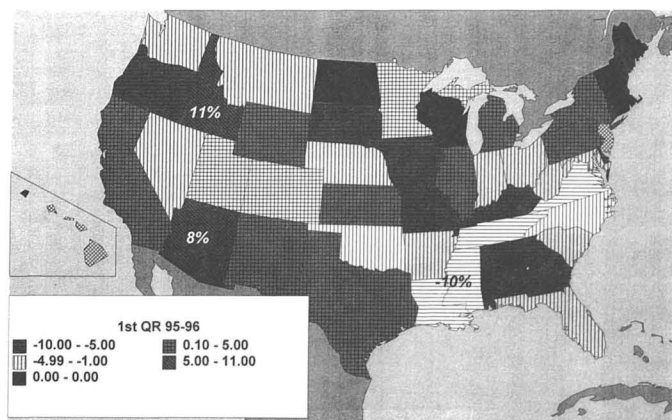


Figure 1. Change in US Production.

We are losing producers every year. The latest data from a July Farm Bureau survey shows a 5 percent decline over 12 months for the U.S. (Figure 2).

Between 1994 and 1995, the U.S. lost almost 6,000 producers. Grade B producers stopped production at almost a 15 percent rate. The 10 states in the Southeast lost 793 producers or a 8.5 percent decline.

Recently, even more producers are leaving the industry. Over the last nine months that rate has increased. Projections are that over the long term, the U.S. will lose 5 percent of producers every year.

The other major factor we often look at in deter-

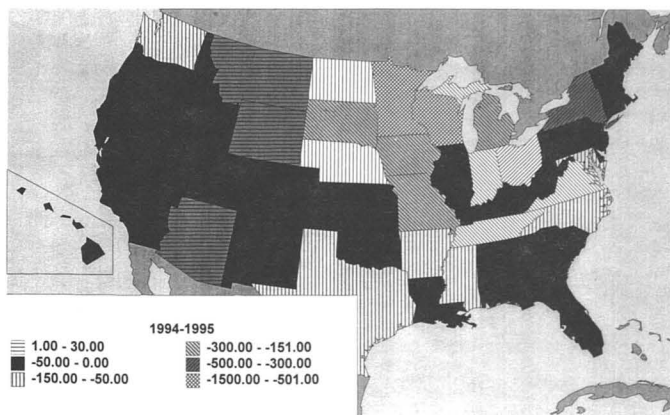


Figure 2. Change in Dairy Farmers.

mining the level of production is the production per cow. Between 1984 and 1995, U.S. production per cow increased 31 percent to 16,451 pounds. Production was the highest in California and the lowest in Louisiana. The average annual increase in production per cow has been 2.8 percent since 1984.

The highest production states are not necessarily the states with the highest production per cow. The top 22 states actually averaged lower in production per cow than the nation as a whole. All the top productivity states are Western states. California averaged 20,197 pounds per cow while Arizona, New Mexico and Washington were above 18,000 pounds.

The Southeast average production per cow continues to average 86 to 87 percent of the national average. I am not a Dairy Scientist but unless someone figures out how to economically air condition barns, the South will never catch up with the rest of the nation.

Another factor having an impact on the market is the continuing growth in the size of farms. There is a lot of variation in the average size in the various states but the average size in each is increasing. A recent Ohio State University study showed that the real income per cow "trended down by an average of \$28 per year." Over a decade, farmers need to increase after-tax income by 50 percent (or 60 percent before taxes) to maintain the same standard of living. To gain that sort of increase, the number of cows in their herds must increase by 60 percent. This trend should continue into the future. In fact we should see an increase in the rate of growth. This combined with the trend of losing three 100 cow operations and replacing them with a 600-cow herd assures the continued increase in the average of operations. This is even happening in the Midwest. All regions of the country are showing increases in the average size herd. Some are just starting at a higher level than others.

As we see larger and larger producers, their impact on the market changes. The amount and types of services demanded from their co-op are different for large and small producers. In fact, large producers such as those in the Southwest and Southeast are less dependent on co-ops and more attractive as nonmembers to processors. With over 80 percent of the milk marketed through co-ops, farmers are to be complimented on their willingness to work together over the long run. At the same time, we may see more of what we have seen in New Mexico when relatively few producers can form a co-op and supply one or more plants.

I think I was like most observers and thought that the recent series of cooperative mergers was a major change in the regional market structure. After looking at the situation, I am not sure that a lot has changed. During the early 1980's, Dairymen Inc. controlled about 40 percent of the milk in the region. There were about

20 percent independent producers and the rest belonged to various other cooperatives. The strongest membership area was Florida with 100 percent cooperative membership. Various plants scattered around the area had independent supplies of milk. Over the next 10 years or so several new cooperatives were formed. Others faded away. At least one new regional cooperative, Southern Milk Sales, competed with D.I. for both producers and markets. In general the number of independents increased slightly.

This all changed in 1994 when co-ops started merging. Gulf Coast Dairies merged with D.I. and D.I. merged with Mid Am. Southern, Gulf Dairies and Coble also merged with Mid Am. These mergers made Mid Am the largest co-op in the nation. On a national basis, Mid Am controls less than 20 percent of the production. In the Southeast Mid Am now controls about 40 percent of the milk in the market. About 18 percent of the producers are non members and the rest of the producers belong to a variety of co-ops., some new and some old. All the dairy farmers in Florida are still co-op members. This does not sound a lot different from what was happening 10 to 15 years ago.

Given the current market structure, no single co-op can set the market price. They will get the blame if the price falls but they cannot set the price. They can lead but others must follow.

The level of over order premiums in many parts of the country has declined each year since 1992. (Table 1) Premiums in Atlanta have gone from \$1.09 in 1992 to \$.13 in 1995. The same types of declines have occurred in many areas of the U.S. Florida still has some significant premiums but when the price of milk anywhere in the South drops it has an impact on their price also. The bottom line is that premiums are not sufficient to keep production up in high utilization areas.

Table 1. CO-OP VS. FO Class I Price \$/CWT.

CITY	1992	1993	1994	1995
Atlanta	1.09	.99	.61	.13
Chicago	2.90	3.02	2.47	1.76
Dallas	.47	.40	.24	.18
Denver	1.00	.71	.71	.71
Miami	2.06	1.47	1.25	1.33
New Orleans	.35	.35	.17	.06
Philadelphia	1.21	1.00	1.00	.93
Milwaukee	2.90	3.02	2.47	1.75
Seattle	.45	.45	.45	.45
Washington, D.C.	1.26	1.05	.99	.95
U.S. Average	1.12	1.03	.81	.64

Source: Dairy Market News, 1/22/96

Let me point out that Milwaukee still has a \$2.75 premium. This is the amount necessary to attract milk from profitable manufacturing plants to a fluid milk plant. Is it any wonder that the South has to pay a \$2.00 to \$3.00 give up charge to get milk in the fall? I do not think that the situation will change any time in the near future.

Changes in production and marketing patterns can be shown by the amount of manufacturing products produced in various regions (Table 2). Production in three of the six regions declined between 1980 and 1994. All three western regions showed significant increases in overall production of manufacturing products. The mix of products has also changed. NFDM production has shifted from the Northeast and Midwest to the Northwest and California. The largest increase in cheese production has also been in the West with California showing the largest.

Table 2. Changes in Manufacturing Milk.

	CHEESE		BUTTER		NFDM		TOTAL	
	1980	1994	1980	1994	1980	1994	1980	1994
(Mil. Lbs.)								
Northeast	724	1,295	226	245	334	223	16,000	13,000
Midwest	2,642	3,611	575	470	418	173	32,000	27,000
Northwest	262	614	75	145	110	220	4,000	7,000
California	182	926	185	345	243	430	7,000	15,000
Southwest	53	160	47	51	33	140	3,000	7,000
Southeast	121	124	38	40	23	30	3,000	2,000
Total	3,984	6,730	1,146	1,296	1,161	1,216	65,000	71,000

Cooperatives

Results of a 1993 USDA survey indicate that dairy cooperatives handled 82 percent of the nation's milk at the first handler level in fiscal 1992. In 1994, dairy cooperatives' milk payments to farmers constituted 86 percent of the nation's cash receipts from milk production.

Dairy farmers' integration at the first handler level usually entails a tactic or explicit marketing agreement with a cooperative that designates it as the exclusive marketing agent for the farmer's milk production. The majority of dairy cooperatives perform only bargaining function, but they represent only 25 percent of cooperative milk volume. Prices members receive for their milk usually include minimal deductions, because bargaining co-ops incur minimal marketing expenses.

The remaining dairy cooperatives operate one or

more plants and, to varying degrees, are further integrated down the market channel. Transmission of milk prices to farmers is somewhat more indirect because most of these co-ops "reblend" their earnings before paying members for milk. The blend price is calculated and paid to farmers after adding premiums and/or marketing earnings to and subtracting expenses and/or marketing losses from the total value of the milk pool.

In 1992, dairy cooperatives with processing/manufacturing operations handled 75 percent of the total volume of milk marketed by cooperatives. These cooperatives manufactured major shares of the nation's "hard" dairy products: 65 percent of the butter, 81 percent of the dry milk products and 43 percent of the cheese. However, their presence in the fluid and "soft" product categories was rather limited: 16 percent of packaged fluid milk, 13 percent of cottage cheese, 10 percent of ice cream and ice milk, and only 3 percent of yogurt.

The Types of Dairy Cooperatives

Based on the functions dairy cooperatives perform in the market channel, vertical integration by dairy cooperatives can be classified into six categories. Each category shows a different level of integration and involves different market opportunities and risks.

1. *Bargaining Cooperatives*: Cooperatives that operate as bargaining associations and refrain from product processing/manufacturing.

Bargaining cooperatives operate under the philosophy that dairy producers' place in the market is producing milk and the role of the dairy cooperatives is to secure the most profitable outlets for the milk and in jointly preparing milk for the market at the first-handler level. Further processing and sales of dairy products are left to other handlers. Business risk for bargaining cooperatives is low as long as there are buyers of milk. At the same time, they only have a limited opportunity to capture more of the consumer dollar. They are takers of the milk price determined when the economic law of supply and demand for milk is played out in the marketplace. Their strength is in numbers; in this case, the volume of milk cooperative members collectively possess. In 1992, this category included 135 pure bargaining cooperatives and 44 bargaining cooperatives that operated receiving stations without other plant operations. Together, 179 cooperatives represented 68 percent of dairy cooperatives, but only 25 percent of milk marketed by all cooperatives.

2. *Bargaining-Balancing Cooperatives*: Co-ops that bargain for milk prices and manufacture the sur-

plus into commodity dairy products for supply balancing.

The main function of these cooperatives is selling milk and performing related services to other handlers. A bargaining-balancing cooperative operates much like a bargaining cooperative, except that it has plant facilities to service handlers' needs and/or to balance milk supply. Having the capability to dispose of surplus milk substantially strengthens these cooperatives' bargaining position. Surplus milk is usually made into storable "hard" products - butter, powder and cheese.

Continuing declines in the government support prices for dairy products have had the effect of making supply balancing operations unprofitable. Furthermore, a balancing plant is usually a high-cost operation because the facility is used only part of the year and usually at low capacity. These plants in the South are quickly disappearing and soon may be completely gone.

In 1992, there were 24 bargaining-balancing dairy cooperatives. They accounted for 9 percent of dairy cooperatives and 17 percent of all milk marketed cooperatively. Their share of the milk processed or manufactured by cooperatives was 11 percent.

3. *Undifferentiated Hard-Product Manufacturing Cooperatives:* These cooperatives capture processor margins by manufacturing undifferentiated, commodity dairy products in their well-run, large-scale modern plants. They sell little milk to other handlers and most of the milk supply is used in their own plants.

Margins are slim to nonexistent in making commodity products, so three things are required to operate a successful manufacturing cooperative:

- A very efficient large-scale plant that takes advantage of modern technology and economies of scale;
- A very large volume of milk that allows the cooperative to operate its plant at or close to maximum capacity; and
- A ready market for manufactured products, including the Commodity Credit Corporation (CCC) or foreign markets.

Undifferentiated hard-product manufacturing cooperatives have very large scale, state of the art, efficient plants. They are usually operated at or near capacity and at very low cost. However, because these plants are usually used for high volume manufacturing of butter, powder and cheese, the operations are not flexible enough to take advantage of changes in market opportunities. The continuing decline in the government support prices for dairy products affect market product

prices and have made manufacturing operations less profitable. However, recent relaxation of trade barriers may help cooperatives manufacturing butter and powder find new and promising markets in the international arena.

There were five dairy cooperatives in this category in 1992. They represented less than 2 percent of dairy cooperatives but handled 4 percent of cooperatively marketed milk. Their manufacturing volume accounted for 8 percent of milk processed or manufactured by all cooperatives.

4. *Niche Marketing Cooperatives:* These cooperatives capture processor margins and at least some marketing margins. They manufacture and market differentiated products as the main line of business. They typically process all of their members' milk in their plants.

These cooperatives are mostly located in the traditional dairying areas of the country. They manufacture and market specialty or branded cheese and other dairy products for particular market niches. They are usually long established cooperatives with small scale plants; many need to be modernized and their importance is declining.

5. *Fluid Processing Cooperatives:* These cooperatives also capture processor margins and at least some marketing margins. Processing fluid milk products is the main business of these cooperatives. As with niche marketing cooperatives, fluid processing cooperatives typically process all of their members' milk in their own plants. The continuous state of structural adjustment in the fluid milk processing industry is caused by several factors. *Per capita* fluid consumption has been in long-term decline. Aggregate demand has been growing since it hit the bottom in 1982, but at a slow pace. Excess plant capacity in the industry makes it a very competitive business. Above all, dominance of retail outlets by supermarket chain and by dairy convenience store chains tends to depress processor margins.

6. *Diversified Dairy Cooperatives:* These cooperatives are the most vertically integrated. They bargain for milk prices, process and market both differentiated and commodity products, and balance the residual.

Most of the diversified dairy cooperatives started as bargaining balancing or undifferentiated hard-product manufacturing cooperatives. Many diversified into related dairy enterprises as a defense mechanism to adapt to market evolution and changes in government

policies. The pace of growing into diversified dairy cooperatives quickened in the mid-1980's as the government promulgated market-oriented dairy policies and in reaction to fast changing consumer tastes and preferences.

Most of the diversified cooperatives are dominant in terms of member milk volume. Each cooperative operated a system of plants that process or manufacture a variety of dairy products. They typically sell a substantial amount of milk to other handlers, while maintaining a steady volume to their own processing or manufacturing plants to fully use available capacity. The residual surplus milk is usually used in their balancing plants to manufacture butter and nonfat dry milk. Some cooperatives are sophisticated marketers of consumer products.

Diversified dairy cooperatives have an advantage in being able to shift milk to the most profitable enterprises. The cooperative has to have multi-plant processing complex and a sufficient supply of milk to use the plants. The business requires ample financial resources and an able management team.

In 1992, there were 21 dairy cooperatives in this category. While that number represented only 8 percent of dairy cooperatives, their milk accounted for 49 percent of total cooperatively marketed volume.

Prospects For More Integration

Dairy cooperatives market more than 80 percent of the nation's milk supply. With the energy unleashed by a more market oriented dairy economy, they are going to do more with their milk and add value to it. Their presence in the market channel will be more prominent. In the future, most dairy cooperatives will head in two divergent directions-to more or less vertical integration. Many will merge with or evolve into diversified dairy cooperatives, while others, usually small cooperatives, will divest and become bargaining cooperatives. Some large cooperatives will remain in the bargaining-balancing mode as long as their balancing operations are a relatively minor part of their operations.

Some farmers are striving to form organic or other niche marketing cooperatives. While they may provide limited benefits to their select group members, they are not likely to be a major factor in the foreseeable future.

Diversified dairy cooperatives will handle the major share of the nation's milk volume. The market will be more vertically integrated by these cooperatives. In the process, they will confront a fast-changing business environment and many unprecedented challenges, including:

Less government support: When the government support price for milk was high, it essentially set market prices for milk and milk products. The market was

very stable. Since the early 1980's, government policy has been to reduce surplus production by reducing production capacity and support prices. Price fluctuations have become more common and sometimes volatile. Inventory management has been a challenging task, especially for cooperatives that age cheese. By 1999 the only government support for inventory management will be a recourse loan program thus challenging farmers to manage their own industry.

Globalization of market: Greater market access under the Uruguay Round agreement of GATT and NAFTA thrusts the dairy industry into international competition. **The world dairy market will be an increasingly important factor in making business decisions.**

Consumer relations: Discerning and adapting to consumers' shifting tastes, preferences, and perceptions of food nutrition will challenge the dairy industry. Consumers' demand for better quality and more services also must be satisfied.

The Processing Industry

Changes in the processing sector continue to be significant. The dominance of national firms has significantly declined over the last 30 years. (Table 3) In 1964 national and local firms dominated the market for fluid milk products with 27 and 55 percent, respectively. Both have lost market share and by 1993 national firms only had a 12 percent market share and local firms were down to 48 percent.

Table 3. Sales of fluid milk products, by type of firm, selected years.

Type of Firm	1964	1970	1980	1988	1993
	Percent				
National Firms	27.2	23.3	25.0	16.8	12.4
Regional Firms	5.1	7.7	4.0	11.3	5.1
Local Firms 1/	54.7	48.5	38.7	38.7	48.3
Cooperative 2/	9.7	11.5	14.8	14.8	15.6
Integrated Supermarkets: 3/					
Sole Outlet 4/	2.9	8.2	14.2	18.4	18.6
Others 5/	0.4	0.8	3.3	NA	NA
Total	100.0	100.0	100.0	100.0	100.0

In their place cooperatives and supermarkets with processing plants have shown large increases. (Table 4) Supermarkets have shown the largest increase going from less than 3 percent to a 18.6 percent share by 1993.

Table 4. Marketing Channels for Fluid Milk Products.

(Year)	1954	1969	1977	1980	1988	1993
Outlet	Percent					
Home delivered	50.0	28.0	6.6	2.4	0.9	0.8
Plant & Farm Sales	2.0	1.9	1.5	2.7	2.0	1.7
Stores:						
Supermarkets:						
Integrated	1.0	7.1	13.4	17.3	18.4	18.6
Dairy & Convenience:						
Integrated	0.1	4.4	5.6	8.0	9.0	3.0
Other:	2.8	3.1	4.2	4.5	1.5	7.0
Other Stores:						
Other Stores:	19.1	21.5	27.2	19.0	20.1	
All Stores:						
All Stores:	34.5	51.0	75.4	80.7	83.6	84.7
Food service & Institutional outlets:						
Military	2.8	1.6	1.3	1.4	1.1	1.0
Schools	2.1	6.5	7.1	7.2	6.9	6.3
Restaurants, Hotels & Institutions	8.4	8.6	5.7	5.6	5.5	5.5
Subtotal						
Subtotal	13.3	16.7	14.1	14.2	13.5	12.8
Other	0.2	2.4	2.4			
Grand Total						
Grand Total	100.0	100.0	100.0	100.0	100.0	

*Less than 0.5 percent

This change in market share has reflected the change in market channels which has occurred at the same time. **In 1954 one half of the milk was home delivered. Today that figure is less than one percent.** At the same time, store sales have picked up most of the sales with supermarkets having the largest increase. The market share in food service and institutional outlets has remained fairly constant.

The dominance of the retail sales on milk has increased the importance of advertising and promoting milk. The industry has begun coordinating promotional efforts, however, the brand promotion, non-brand advertising funded by producers, and the non-brand advertising funded by processors are uncoordinated.

It is difficult for dairy farmers to become advertising experts. However, they do have some very knowledgeable people working for them. Dairy farmers may not understand why promotion programs are designed as they are but they are working. The National Dairy Board program is targeting those who drink milk. For example, market analysis has shown that 10 percent of the population consumes 41 percent of the dairy products. By targeting the segments of the population interested in lowfat dairy products (females, older individuals, white collar workers), the industry is able to get the most of the advertising dollar.

It costs money to move milk. Even though the supply and demand for milk are fairly well balanced as a whole, there are serious imbalances between regions and seasonally. A total of 37 states produce less milk than is consumed in that state. (Figure 3) In addition there are 12 states which do not even produce sufficient milk to meet their fluid needs. Last year, for example, Mid Am paid between \$8 and \$9 million to bring in supplemental milk last fall. Carolina Virginia built up a supply for the new Atlanta Publix plant but they were short of milk even before the plant opened. The cost of supplemental milk including transportation and give up charges was in the \$20.00 range again.

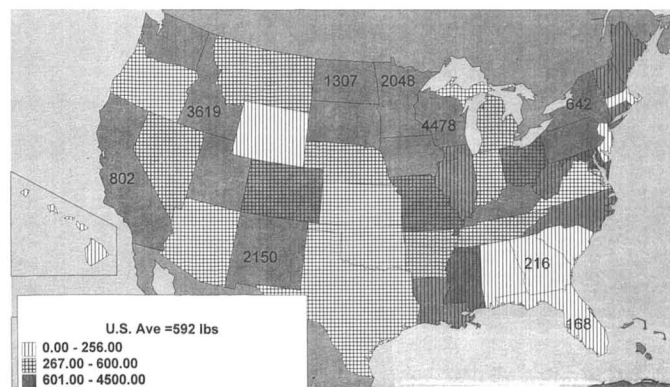


Figure 3. Per capita Milk Production

The upper limit of price available in the market is the price at which an outside supply of milk would be attracted into the market. For the last several years, that supply has been from New Mexico. For several years the supply in New Mexico has exceeded the processing capacity and surplus milk from that area found a home in the South at the Federal order minimum price. Recently, additional processing capacity has balanced that supply with demand but I understand that there is still milk available in New Mexico. The difference is that the cooperative is offering the milk at the cooperative price instead of cutting the price.

Today, a price which covers the cost of production plus transportation would be needed to move milk here. To attract milk to Atlanta would require the cost of production in New Mexico, \$11.50; plus administrative costs, \$.44; in addition, hauling, \$5.40; for a total of \$17.34. As long as the blend in Atlanta does not get above this level, milk will not move from New Mexico over the long run.

Another way of measuring the cost of an alternative supply of milk is shown in Table 5. Spot loads of milk for the Miami market from either the Midwest or Southwest will cost significantly more than a local supply of milk. This shows how far DCMA can raise the price without disrupting the market. I must point out at this point that this price is the cost of an alternative supply of milk. It does not guarantee a price which will cover your cost of production. If you assume a \$12.00 BFP, the maximum price for an alternative supply would be \$15.94. Not many Southeastern producers want to produce milk at that price.

The main obstacle to success this time seems to be a lack of trust between the large and small co-ops. Progress is being made toward a totally visible pricing system which should minimize this problem. I do not know if DCMA will end up looking like CMPC or not, but that may be just what is needed.

Table 5. Net cost of moving milk to Miami, FL.

	Madison, WS	Roswell, NM
F.O. Class I Dif..	\$1.21	\$2.20
Give Up Charge	+1.50	+0.00
Freight	+5.41	+6.66
Gross Cost	8.12	8.86
Less Miami F.O. Dif..	-4.18	-4.18
Net Cost	\$3.94	\$4.68

Federal Orders

The 1996 Farm Bill will change the structure of the Federal milk marketing order system. At this point, not a lot is known about how this will proceed but there are some lessons which can be learned from the recent creation of the Southeast order. The new and improved Order #7 came into effect in July, 1995. There are some lessons the industry should learn as it proceeds with this merging process.

In general the criteria for the merger were met by the new Southeast Order. Most of the price alignment issues were addressed, and with some additional fine tuning done later, these problems were solved. Another issue was including in the order the common competitive supply and market areas. The final product is not perfect but it is a lot better than it was before. On the distribution side, the average plant covers a 150-mile radius. However, there are some large plants which may distribute into almost every state in the region. A by-product of the merger was the lock in of plants. Now plants are locked into the order in which they are physically located. This has eliminated the problem of plants moving back and forth from one order to another based on relatively small changes in sales. This has always caused problems with changing or riding the blend in an order plus the fact that producers could gain an unfair advantage by having a base given to them.

There were requests to have three times a month producer payments and a producer security fund to protect producers from processor bankruptcies. These proposals were vigorously opposed by processors and were not part of the recommended decisions. The lesson learned here is to make sure producers have good testimony supporting all those provisions they want.

Reducing the cost of pooling milk was not a criterion of the Southeast Order but it was a goal. It is difficult to determine how much cost will be reduced since the order has been in effect for less than a year, but significant savings should be realized.

Another justification for the order was to implement a base excess plan within the region. This was accomplished and for the first time in a number of years cooperatives will be paying on base and excess. It is too early to determine if the base plan will better match supply and demand throughout the year, but there is

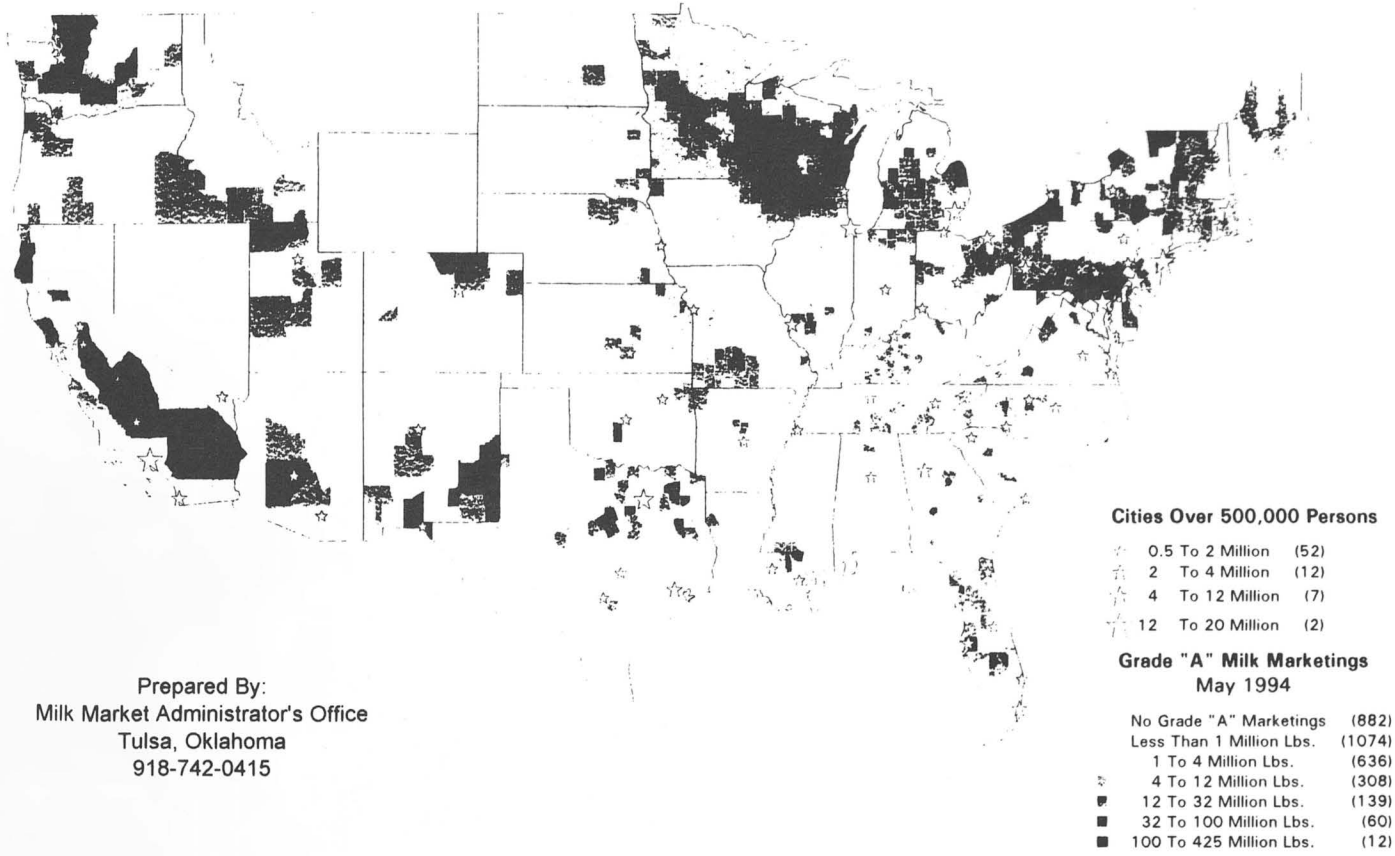
evidence that some producers are not responding very much. In the South, the most significant mismatch which a base plan could address is the surge of production during the fall. A base plan could be used to encourage more production between July and September. Many people do not think that there is sufficient incentive to change production patterns but last month in the Southeast order the difference between the base and excess price was \$4.74. This may be enough incentive.

Balancing this seasonal mismatch and supply and demand is one of the largest costs to cooperatives. It could be reduced by some degree with proper financial incentives but we will never match supply and demand as well as other parts of the country. Again I use the example of the Southwest. Due to the lack of rain and temperature extremes, production varies 5 percent from month to month. Also, the manufacturing plants in the area can use a constant supply of milk. This is a much better match than in the Southeast.

The merging of orders in the Southeast is likely not over but further mergers will make it more difficult to move milk from where it is produced to where it is processed. The current cost of hauling milk is about 3.9 cents per cwt. per 10 miles. Class I pricing zones only account for about one half the cost of moving milk. In the past, as milk moved south to other orders, increased utilization and higher price zones paid for the cost of moving milk. For example, moving milk 800 miles from Louisville, Kentucky to Orlando costs about \$3.12 per cwt. The difference in differentials is \$2.00 (\$4.11 - \$2.11). When milk moves from a 72 percent utilization market to an 85 percent utilization market, there is also a gain. The combination of these two factors plus a small over order premium would be sufficient to move milk. If we were to end with ten Federal orders, a new Southeast order may include both Louisville and Orlando and then the only price mover would be the difference in pricing zones. Supply areas are not a criterion in determining federal order areas. However, it is considered and when almost 300 million pounds of your daily supply of milk comes from outside the state, next Florida order may be larger than the current orders.

This is a potential problem, but there are real problems which exist today. Before the Southeast order, Louisiana and Mississippi markets had lower utilizations than Alabama and Georgia. Today they are all the same. There is no incentive, within the order, to move milk to the East from the pool of surplus milk in the West. In fact milk pooled in the manufacturing plant in Franklinton, Louisiana draws \$.50 more out of the pool than milk at a fluid milk plant in Atlanta. It cost Mid Am every time they move "surplus milk" from Franklinton to a deficit market area such as Atlanta.

The bottom line is that in the future orders must include provision to move milk within an order. Cur-



Prepared By:
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Figure 4. Federal Order & California Milk Marketings - May 1994 & Metropolitan Areas Over 500,000 Persons

rently the market price does not differ much across the nation. (Table 6) Also we must be able to move milk not only north and south but also west to east. Figure 4 shows that there is very little milk close to where the people are located. The only places where milk and people match up at all are in Florida and Louisiana and both of them have serious environmental issues to address for long run survivability.

Table 6. Mailbox prices for Selected Federal milk marketing orders, monthly for 1995.

Federal milk order	July	August	September	October	November	December	July-Dec. Aver.
	\$ per cwt						
New England	11.35	11.71	11.88	12.42	13.14	13.20	12.28
New York-New Jersey	11.39	11.74	12.01	12.61	13.17	13.31	12.37
Middle Atlantic	11.60	12.14	12.26	12.82	13.50	13.32	12.61
Carolina	12.28	12.69	12.70	13.20	13.95	14.10	13.15
Tennessee Valley	11.79	12.41	12.17	12.71	13.53	13.70	12.72
Southeast	12.08	12.40	12.39	12.89	13.53	13.55	12.81
Florida 3/	13.77	14.29	14.09	14.20	14.96	15.43	14.46
Southern Michigan	11.34	11.74	11.96	12.47	13.23	13.23	12.33
E. Ohio-W. Pennsylvania	11.50	11.83	12.11	12.60	13.37	13.56	12.50
Ohio Valley	11.32	11.89	12.17	12.48	12.83	13.63	12.39
Indiana	11.22	11.66	11.89	12.42	13.25	13.40	12.31
Chicago Regional	11.52	11.87	12.69	13.57	14.08	13.92	12.94
S. Illinois-E. Missouri	11.63	11.37	11.69	12.95	12.74	12.96	11.94
Louis.-Ist.-Evans.	11.58	12.02	12.01	12.56	13.21	13.35	12.46
Upper Midwest	11.35	11.73	12.35	13.41	13.94	13.75	12.79
Nebraska-W. Iowa	11.11	11.41	11.85	12.63	13.24	13.05	12.22
Iowa	11.28	11.62	12.31	13.22	13.82	13.68	12.66
Texas	11.23	11.86	11.95	12.48	13.04	13.02	12.26
Southwest Plains	10.80	11.35	11.56	12.13	12.72	12.78	11.89
E. Colorado	11.30	11.83	11.97	12.53	13.01	13.14	12.30
SW Idaho-E. Oregon	10.83	11.13	11.72	12.27	12.74	12.60	11.88
Great Basin	10.67	11.23	11.53	11.90	12.35	12.44	11.69
New Mexico-W. Texas	10.96	10.75	10.82	11.35	11.80	11.69	11.08
Pacific Northwest	10.84	11.21	11.38	11.92	12.47	12.19	11.67

1/ Mailbox price is net pay price received by farmers marketing milk to handlers regulated under the Federal orders. Includes all payments received for milk sold and all costs associated with marketing the milk. Price is reported at the market average butterfat test.
2/ Orders merged into the Southeast order whose price is reported from July onward.
3/ Weighted average of information for Upper Florida, Tampa Bay, and Southeastern Florida orders.
SOURCE: DAIRY MARKET NEWS, VARIOUS ISSUES, 1995

Another issue which may be addressed on several different fronts is classified pricing. The proposed co-op floor price in the Southeast, in effect, decouples Class I prices from the BFP. Fluid milk producers constantly receive the wrong market signal because of the tie to the cheese market. One interesting point in the new farm bill is that there is language allowing USDA to increase the Class I differential when it is needed.

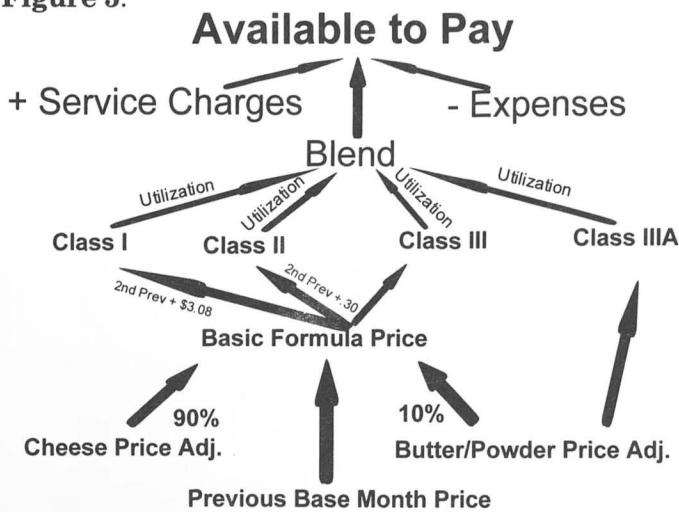
A related factor is how well the BFP is working. It may not have been in place long enough to evaluate, but there are a lot of complaints about the butter/powder adjuster in the formula, Figure 5. Why is it needed when there is a Class IIIA price?

The Market

The market for U.S. dairy products looks good for the near future. Worldwide demand for milk should increase by 1.5 percent each year as many developing countries improve their diet. At the same time GATT requires that the EU reduce their export by 20 percent or 3.9 billion pounds. This means that there will be an increase in commercial demand of 11.5 billion pounds.

The countries which have the potential to increase production are New Zealand, Australia and the U.S. The

Figure 5.



amount that New Zealand can increase is limited. They are a grass based industry and would be very lucky to expand exports by 50 percent. If the U.S. increase exports by 300 percent there would still be a worldwide deficit of over 6.8 billion pounds.

In spite of the fact that there is a potential for increasing export, some regions cannot supply themselves. The Southeast is a deficit region and it is getting worst. The annual deficit of milk will be almost 25 million pounds this year. This figure understates the actual deficit based on monthly supply and demand. It is estimated that during September, dairy cooperatives will bring in 80 million pounds of milk to supply market needs. That is almost 1,700 tankers of milk or 56 every day. **When you assume that the average trip could be three days, a bunch of trucks will be required.**

The cost of moving that much milk will be significant. The cost of moving milk from Madison Wisconsin to Miami is about \$5.41. Add to that a give up charge of \$1.50 and your spot milk now costs \$6.91. When you consider the Class I differentials in the two markets, the net cost of bringing in milk amounts to \$3.94. Bringing in 10 million pounds into Florida could total \$400,000. In recent years, almost all of this cost has been absorbed by producers. They cannot afford to pay this high cost this year. **Processors are worried about a supply of milk for the fall and seem willing to pay the cost of covering the shortage. If dairy farmers do not work together this year to firmly establish a realistic pricing program, it will never happen.**

Some changes in the way milk is marketed must be made in the near future. Even if producers just want to supply the Class I market, we are getting short of milk. This year we will have about a one billion-pound surplus. Over the next 15 years, that surplus will disappear.

There is a long list of options available to the industry to address many of the problems. Some of the

options which could be considered include:

Milk prices must increase, but we have to be selective on what prices. The greatest percentage of the milk price is the BFP, but increasing it will create a national surplus of milk. What is needed is an increase in the Class I price and maybe the Class II price.

In the future, we will see both shifts and gains in processing capacity as population changes. For example, in 1995 a new Publix plant opened in Atlanta. Currently both Kroger and Mayfield are planning to locate plants in the area also.

As on the production side, as we have lost plants some of them have been replaced with larger processors. Many of these new plants are operated by supermarkets. Considering that 57 percent of fluid milk is sold by supermarkets, it is not surprising that they have a growing share of the market. Many of these plants also have a limited product line. Some large plants are only processing a limited number of items in plastic jugs. These products are very efficiently moved in truck load lots to stores. Competitors may be just as efficient in processing but they easily get beat on the distribution. Again emphasis on jugs is not surprising, since 64 percent of the milk is sold in gallons and 19 percent in half gallons.

We will see more pressure to use NFDM in Class I, at least during the summer and fall. If the milk is moved without reclassification, there is a significant economic advantage is using NFDM. (Table 7) If the milk is reclassified at the providing market, at least some protection is provided.

Table 7. Cost of Moving NFDM To Miami From Portales

	W/O RECLASSIFICATION	WITH RECLASSIFICATION
F.O. Class I Dif.		2.35
Give Up Charge		.00
Freight	.50	.50
Gross Cost		2.85
Miami F.O. Dif.		4.18
Net Cost	Class III A+ \$.50	-1.33

Class I prices are subsidizing Class II milk. The Class II price is the BFP plus 35 cents in all Federal orders. Given a typical BFP, the Class II price is significantly below the cost of production in many areas. Producers cannot afford to produce milk at that price, but Class II products are where processors make most of their profit. Therefore, some middle ground must be reached.

Within a short time, all the milk in the Southeast will have to be used only for Class I milk. The industry will have to rely more and more on outside milk. The cost of balancing the market will have to be borne by all in the market. Unless production patterns change, the

region will still have surplus milk during some of the year and there will be a cost of balancing that milk as well as the cost of supplemental milk. Some form market service payments through the federal order system can spread the cost evenly and over a wider area is the most likely tool.

When the preponderance of sales are Class I, it may be logical to realign the order classes of milk. Fluid markets may only need a single class of milk. In addition the Class I price may have a different price mover than the BFP. The Southeast Class I price should reflect the needs of the market and not the needs of the cheese market. The overall price level will have to be considered so as not to get out of line with the rest of the nation, but decoupling should be given serious consideration.

Another approach to maximize revenue to the producer who is producing for the market is to institute a base plan. A pay in - pay out plan would reduce both the cost of depositing of surplus milk and bringing in supplemental milk. We are seeing in the Southeast Order the difference in base and excess milk is more than \$5.00. This is sufficient to encourage changes in production patterns.

One part of the FAIR Act is a section allowing for Multiple component pricing. It is not needed in the Southeast and parts of the Northeast. The majority of any surplus milk will be shrinkage and it does not matter whether shrinkage is high protein or not, and there will not be a need to discourage the production of any amount of milk due to a lower blend price.

Producers must be realistic that additional production in some areas is needed. All milk which is produced locally will help reduce the cost of supplying the market. At the same time the industry must ensure that there is a supply of milk available to meet market needs. This year we may not be able to find sufficient milk to fill all orders. In the past, a stand by pool was an effective and low cost way to meet those market needs.

International Markets

With nearly 1 billion people around the globe able to afford dairy products in their diet on a daily basis, the international dairy market is enormous. Today the primary benefit of the export market to the U.S. industry is as a market for surplus products. Exporting surplus products, even at low prices, help hold up domestic dairy prices. In recent years, the Dairy Export Enhancement Program (DEIP) has added about 50 cents per hundredweight to producers' price. We are exporting about 3 percent of our annual production but the industry has maximized exports under this approach. **The U.S. approach to the international market will have to change if we are going to expand international sales.**

To build export sales and ultimately boost dairy pro-

ducers' income, the U.S. dairy industry must be a reliable supplier to the foreign markets and in order for that to happen, the international market must be profitable. When NAFTA opened up the Mexican market, some U.S. co-ops went to Mexico to investigate the market. They were told up front that if they were there to be a long term supplier, they were welcome and the Mexicans wanted to work them. If, however, they were not willing to be in the market year after year, there was no interest.

Producers, processors, suppliers and exporters have worked together to form the U.S. Dairy Export Council. Organizations such as the Council or individual co-ops working with foreign dairy organizations are working hard to capture part of the growing international market.

Europe is reducing dairy subsidies and production will fall. New Zealand's production cannot grow rapidly. They are a grass based industry and they just do not have the capability to expand production to any great extent. Therefore, the U.S. is in the perfect position to increase sales in Mexico, the Middle East, Pacific Rim, Asia, South America, Caribbean and Central America, India, Pakistan, Eastern Europe and Russia, Europe and maybe even Canada.

The greatest export potential is for commodities such as powdered milk, butter, butter oil, whey, and lactose. At the same time there is also an opportunity for selling value added products like mozzarella, processed, Parmesan and cheddar cheeses and even fluid milk products. UHT milk is being processed on the east coast, shipped by rail car to the West coast, put on a ship and sent to Korea and sold at a competitive price. Market expansion is possible but it also takes innovation.

Managing Risk

Almost every day a dairy farmer tells me that he would not have any financial problems if milk prices would go up like feed prices have. In recent years farmers have seen significant rises and falls in milk prices and farmers are learning to deal with them. Beginning this year dairy farmers got a tool they can use to manage risk. **The Coffee, Sugar and Cocoa Exchange and the Chicago Mercantile Exchange are now offering fluid milk futures which allow farmers to hedge their milk prices.**

Future prices or hedging was not needed as long as the support price was effectively setting the price of milk. But in the mid 1980's, when support prices were lowered, the milk price started fluctuating. Today the support price is now only a disaster price and by 2000 the industry will not even have that. Today the market sets the price for almost all the milk produced in the U.S.

The futures contract is not designed for dairy farmers to "speculate" what the market will do, but rather it is to protect a certain income level. When

a dairy farmer hedges he is picking a price that he can do business.

It is still too early to tell how this market will develop. To be successful, dairy co-ops will have to facilitate the use of the futures market by providing education on the concept, encouraging the use of futures, or offering fixed priced contracts to members.

Hedging provides several benefits to dairymen including knowing the price or cost of goods bought or sold at an earlier time, providing greater accuracy of operating budgets and improving cash-flow management. Hedging allows persons to protect themselves from most of the absolute price risk. It will not protect against basis risk or all the variability of price movement between Federal Orders. Economists are just beginning to work on basis tables which are necessary for dairy farmers from around the country to have before dairy farmers can effectively use this new tool. It will take a while.

The Beef Market

Many dairy farmers lose money every time they sell a calf. All beef prices are depressed and dairy farmers are losing the 10 to 15 percent of their income they usually earn from beef sales. Beef prices will come back but dairy farmers will have to adjust the expected income from this enterprise. I do not think the veal calf industry will recover.

There are a number of alternatives dairy can consider. More dairymen may feed out steers, if feed and management are available. The problem is that we may be sex selecting calves in a very few years and totally eliminate this enterprise.

Food Safety

Health concerns seem to be very cyclical. Today it is fat, tomorrow cholesterol, and the next day it could

be salmonella or BSE, or "mad cow" disease. Consumers demand high quality milk. They may not be able to define high quality but they do want it. Of course, veterinarians have a direct impact on the quality of milk being produced. I hope some sanity will prevail in the area of additives. Zero is constantly getting smaller at a significant economic cost and with very little, if any, added safety.

The industry is doing better. The percent of food borne illness outbreaks attributed to milk and milk products have declined from 25 percent in 1938 to less than 1 percent today. USDA is making a major effort toward a proactive or preventive quality control system. The current system relies too heavily on inspectors to detect and correct problems after they occur.

All sectors of the industry must work together. Just one bad apple, or producer, can ruin the market for everyone.

Conclusion

The milk marketing system in the U.S. may not be broken yet but it still requires a lot of fixing. It does not need just a little patching. **It needs a major overhaul.** The industry must compete domestically with alternative beverages and internationally with other dairy producers. The trend of dairy farmers becoming more involved in marketing will continue. They are realizing that efficient production is only one side of the profit equation. The other is marketing. Over the past year we have seen that dairy farmers working with other dairy farmers can accomplish significant results. It will take a lot more of the same type of cooperation for the U.S. dairy industry to remain strong into the next century.

19027007

NADA #141-063, Approved by FDA.

**PRODUCT
INFORMATION****Nuflor®
(FLORFENICOL)****Injectable Solution
300 mg/mL****For Intramuscular Use in Cattle Only.****CAUTION:** Federal law restricts this drug to use by or on the order of a licensed veterinarian.**DESCRIPTION:** NUFLOR is a solution of the synthetic antibiotic florfenicol. Each milliliter of sterile NUFLOR Injectable Solution contains 300 mg of florfenicol, 250 mg n-methyl-2-pyrrolidone, 150 mg propylene glycol, and polyethylene glycol q.s.**CLINICAL PHARMACOLOGY:** The pharmacokinetic disposition of NUFLOR Injectable Solution was evaluated in feeder calves following single intramuscular administration at the recommended dose of 20 mg/kg. NUFLOR was also administered intravenously to the same cattle in order to calculate the volume of distribution, clearance, and percent bioavailability* (Table 1).**TABLE 1.** Pharmacokinetic Parameter Values for Florfenicol following I.M. Administration of 20 mg/kg Body Weight to Feeder Calves (n=10)

Parameter	Median	Range
C _{MAX} (µg/mL)	3.07**	1.43- 5.60
T _{MAX} (hr)	3.33	0.75- 8.00
T _{1/2} (hr)	18.3**	8.30- 44.0
AUC (µg·min/mL)	4242	3200- 6250
Bioavailability (%)	78.5	59.3- 106
Vd _{ss} (L/kg)***	0.77	0.68- 0.85
Cl _t (mL/min/kg)***	3.75	3.17- 4.31

* harmonic mean
 ** mean value
 *** following I.V. administration

C_{MAX} Maximum serum concentration
 T_{MAX} Time at which C_{MAX} is observed
 T_{1/2} Biological half-life
 AUC Area under the curve
 Vd_{ss} Volume of distribution at steady state
 Cl_t Total body clearance

Florfenicol was detectable in the serum of most animals through 60 hours after intramuscular administration, with a mean concentration of 0.19 µg/mL. The protein binding of florfenicol was 12.7, 13.2, and 18.3% at serum concentrations of 0.5, 3.0, and 16.0 µg/mL, respectively.

MICROBIOLOGY: Florfenicol is a synthetic, broad-spectrum antibiotic active against many gram-negative and gram-positive bacteria isolated from domestic animals. It is primarily bacteriostatic and acts by binding to the 50S ribosomal subunit and inhibiting bacterial protein synthesis. *In vitro* and *in vivo* activity has been demonstrated against commonly isolated bacterial pathogens involved in bovine respiratory disease, including *Pasteurella haemolytica*, *Pasteurella multocida*, and *Haemophilus somnus*.

The minimum inhibitory concentrations (MICs) of florfenicol for each of these organisms was determined using isolates obtained from natural infections from 1990 to 1993 (Table 2).

TABLE 2. MIC Values of Florfenicol Against Bacterial Isolates from Natural Infection of Cattle

Organism	Isolate Numbers	MIC ₅₀ * (µg/mL)	MIC ₉₀ * (µg/mL)
<i>Pasteurella haemolytica</i>	398	0.50	1.00
<i>Pasteurella multocida</i>	350	0.50	0.50
<i>Haemophilus somnus</i>	66	0.25	0.50

*The minimum inhibitory concentration for 50% and 90% of the isolates.

INDICATIONS: NUFLOR Injectable Solution is indicated for treatment of bovine respiratory disease (BRD), associated with *Pasteurella haemolytica*, *Pasteurella multocida*, and *Haemophilus somnus*.

RESIDUE WARNINGS: Animals intended for human consumption must not be slaughtered within 28 days of the last treatment. Do not use in female dairy cattle 20 months of age or older. Use of florfenicol in this class of cattle may cause milk residues. Do not use in veal calves, calves under one (1) month of age, or calves being fed an all-milk diet. Use in these classes of calves may cause violative tissue residues to remain beyond the withdrawal time.

WARNINGS: NOT FOR HUMAN USE. KEEP OUT OF REACH OF CHILDREN. This product contains materials that can be irritating to skin and eyes. Avoid direct contact with skin, eyes, and clothes. In case of accidental eye exposure, flush with water for 15 minutes. In case of accidental skin exposure, wash with soap and water. Remove contaminated clothing. Consult a physician if irritation persists. Accidental injection of this product may cause local irritation. Consult a physician immediately. The Material Safety Data Sheet (MSDS) contains more detailed occupational safety information.

For customer service, adverse effects reporting, and/or a copy of the MSDS, call 1-800-932-0473.

CAUTION: Not for use in cattle of breeding age. The effects of florfenicol on bovine reproductive performance, pregnancy, and lactation have not been determined. Intramuscular injection may result in local tissue reaction which persists beyond 28 days. This may result in trim loss of edible tissue at slaughter. Tissue reaction at injection sites other than the neck are likely to be more severe.

ADVERSE EFFECTS: Inappetence, decreased water consumption, or diarrhea may occur transiently following treatment.

TOXICOLOGY: A 10X safety study was conducted in feeder calves. Two intramuscular injections of 200 mg/kg were administered at a 48-hour interval. The calves were monitored for 14 days after the second dose. Marked anorexia, decreased water consumption, decreased body weight, and increased serum enzymes were observed following dose administration. These effects resolved by the end of the study.

A 1X, 3X and 5X (20, 60, and 100 mg/kg) safety study was conducted in feeder calves for 3X the duration of treatment (6 injections at 48-hour intervals). Slight decrease in feed and water consumption was observed in the 1X dose group. Decreased feed and water consumption, body weight, urine pH, and increased serum enzymes, were observed in the 3X and 5X dose groups. Depression, soft stool consistency, and dehydration were also observed in some animals (most frequently at the 3X and 5X dose levels), primarily near the end of dosing.

A 43-day controlled study was conducted in healthy cattle to evaluate effects of NUFLOR administered at the recommended dose on feed consumption. Although a transient decrease in feed consumption was observed, NUFLOR administration had no long-term effect on body weight, rate of gain, or feed consumption.

DOSAGE AND ADMINISTRATION: NUFLOR Injectable Solution should be administered by

intramuscular injection to cattle at a dose of 20 mg/kg body weight (3 mL/100 lbs). A second dose should be administered 48 hours later. Do not inject more than 10 mL at each site. **The injection should be given only in the neck musculature.**

NOTE: Intramuscular injection may result in local tissue reaction which persists beyond 28 days. This may result in trim loss of edible tissue at slaughter. Tissue reaction at injection sites other than the neck are likely to be more severe.

NUFLOR DOSAGE GUIDE 3.0 mL/100 lb Body Weight	
ANIMAL WEIGHT (lbs)	NUFLOR DOSAGE (mL)
100	3.0
200	6.0
300	9.0
400	12.0
500	15.0
600	18.0
700	21.0
800	24.0
900	27.0
1000	30.0

**Recommended
Injection Location**

Do not inject more than 10 mL per injection site

Clinical improvement should be evident in most treated subjects within 24 hours of the first injection. If a positive response is not noted within 24 hours of the second injection, the diagnosis should be re-evaluated.

STORAGE CONDITIONS: Store between 2°-30°C (36°-86°F). Refrigeration is not required. The solution is light yellow to straw colored. Color does not affect potency.

HOW SUPPLIED: NUFLOR Injectable Solution is packaged in 100 mL (NDC 0061-1116-04), 250 mL (NDC 0061-1116-05), and 500 mL (NDC 0061-1116-06) glass sterile multiple-dose vials.

REFERENCE: 1. Lobeil RD, Varma KJ, et al. Pharmacokinetics of florfenicol following intravenous and intramuscular doses to cattle. *J Vet Pharmacol Therap.* 1994; 17:253-258.

February 1996

Mfd. for

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TAKE TIME

**Nuflor®
(FLORFENICOL)**
HEADS UP THERAPY for BRD

 Schering-Plough
Animal Health

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SPA-H-NFL-29