

DAIRY OUTLOOK

February 2007

Department of Agricultural Economics and Rural Sociology

Current Market Conditions

The markets are changing very rapidly. Corn and soybean prices continue to rise in futures trading. As of February 16, 2007, corn prices at the Chicago Board of Trade (CBOT) are expected to peak at aver \$4.37 per bushel in July and soybeans are expected to reach \$8 per bushel by August. These higher feed prices are expected to squeeze milk producer margins and aggravate already existing poor cash flow conditions. Also, strong export demand for proteins are leaving very low inventories for nonfat dry milk and dry whey, resulting in higher prices for Class III and IV milk. As a result, milk futures at the Chicago Mercantile Exchange (CME) are also being bid up. As of February 16, 2007, CME milk futures are expected to rise from \$14.30 per cwt in February to \$15.70 by September, before declining to \$14.83 per cwt by December.

Last month my initial impression was that these CME milk futures prices were too high given projected market conditions. But two things changed my mind. First, export demand for dry proteins was very strong in 2006. We exported 275,589 mt of skim milk powder, down 3.9 percent from 2005 levels, a very good export year. We also exported 249,377 mt of dry whey, up 7.9 percent, and 58,998 mt of whey protein concentrates, up 57.4 percent, relative to 2005. This has resulted in Western prices of

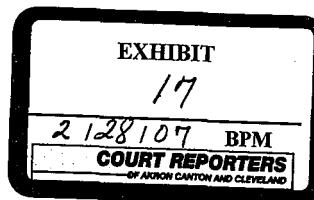
nonfat dry milk rising to nearly \$1.10 per pound and very strong dry whey prices of nearly \$0.60 per pound. This puts a rising floor under Class III and IV prices.

The second factor that convinced me of much higher prices in 2007 was the future milk supply. We were expecting cow numbers to rise a few more months and then begin a decline in response to lower prices from 2006. But the recently announced CWT program could cull an additional 50,000-64,000 head of dairy cows, although CWT officials won't say how many. The fact is we can expect a noticeable reduction in cow numbers starting in March. In addition to that, poor cash flow and rising feed prices, coupled with market pressures to use less rBST, will noticeably lower milk yields during the first quarter of 2007.

The key concern for milk producers in 2007 is to study the relationship between milk and feed costs. Current forecasts indicate that given current milk, corn and soybeans futures predictions, milk income over feed costs will result in above average returns. But milk producers need to be more proactive in managing this margin since short term fluctuations could result in adverse profit margins. Active use of the futures markets or forward contracting through your milk cooperative or grain supplier will help secure a stable and profitable margin in 2007.

Special points of interest:

- Current Market Conditions
- Milk Supply
- Inventories
- Exports
- Implied Domestic Consumption
- Commodity Prices
- Futures Markets
- Federal Order and Farm Gate Milk Prices



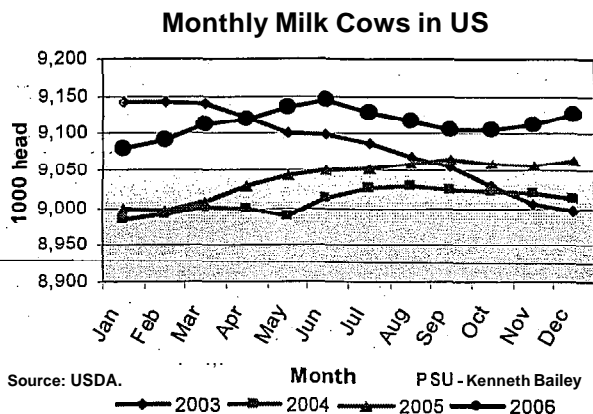
MILK SUPPLY

USDA just released a new milk production report and revised both cow numbers and milk per cow for much of 2006. This revision reveals that estimated U.S. cow numbers in 2006 reached a peak of 9,139 thousand head in June, declined to 9,107 thousand head in September, and then rose to 9,128 thousand head by January 2007. Clearly the rise in cow numbers is adding to production growth. U.S. milk production in 2006 was 182 billion pounds, up 2.8 percent over a year ago.

The February milk production report does provide a disturbing trend. On the one hand cow numbers continued to increase; they rose from 9,126 thousand head in December 2006 to 9,128 thousand head in January 2007 (Figure 1). The announced CWT program will likely attempt to reduce this trend. Milk per cow was 1,699 pounds, up just 9 pounds from the same month a year ago. The question is whether higher feed prices and negative cash flows adversely impacted milk yields, and whether this trend will continue over the next six months. The forecast for milk production for 2006 is for growth

"U.S. milk production in 2006 was 182 billion pounds, up 2.8 percent over a year ago."

Figure 1



Source: USDA.

Month PSU - Kenneth Bailey

the year (Table 1). This is due to a combination of reduced cow numbers due to the CWT and reduced earnings in 2006, and lower milk yields per cow in 2007 due to higher feed prices.

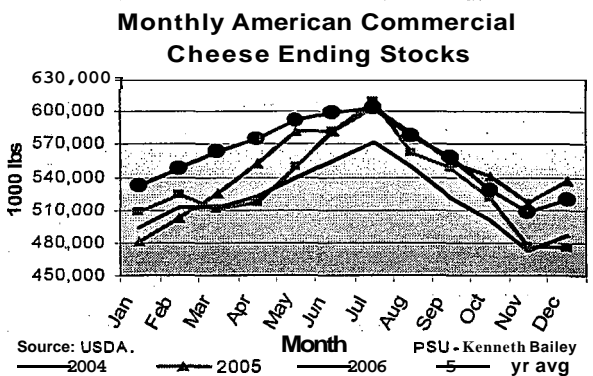
INVENTORIES

Inventories are a barometer for supply/demand factors in the dairy commodity markets. We compared these figures to the 5-year average to see if inventories were above or below average. If above the five-year average, prices will likely come under negative pressure. If below the five-year average, prices will begin to rise.

American cheese inventories in December 2006 were 519.1 million pounds, down 3 percent from a year ago. But a comparison to the five-year average (Figure 2) indicates that inventories are actually higher than normal. Clearly higher than normal growth in the milk supply resulted in greater cheese supplies. And the domestic export market did not clear all these additional supplies.

Butter inventories were slightly ahead of the five-year average, ending the year at 92.7 million pounds (Figure 3). This is well above year ago levels of 58.6 million pounds in December 2005, but just ahead of the five-year average for December

Figure 2



Source: USDA.

Month PSU - Kenneth Bailey

of 81.9 million pounds.

Nonfat dry milk inventories (Figure 4) were well below year ago levels for much of 2006. This was due to reduced milk production levels in California. In addition, additional volumes of skim milk were directed to Milk Protein Concentrate

and skim milk powder production (for exports). That said, inventories of nonfat dry milk in December 2006 showed a rapid rise from 41.4 million pounds in November to 79.8 million pounds in December.

Dry whey inventories were relatively low for much of 2006, ending the year at 34.1 million pounds, 7.5 percent below year ago levels. This was also well below the five-year average December inventory level of 40.4 million pounds.

Exports

Its been a banner year for export markets.. For milk fat products, butter exports were 8,161 mt, up 84.6 percent from a year ago. That was offset by slower exports of butter substitutes at 2,257 mt, down 45.9 percent. Dry whey and lactose exports were both significant and higher in 2006. Dry whey exports were 249,377 mt, up 7.9 percent. Lactose exports were 213,002 mt, up 15.8 percent.

The U.S. also exported a significant quantity of dry proteins and cheese in 2006. Whey protein concentrate exports were 58,998 mt, up a whopping 57.4 percent from a year ago. Dry whole milk exports were 8,561 mt, up 16.6 percent from a year ago. And skim milk powder exports were 275,589 mt in 2006. While this figure was actually down 3.9 percent from a year ago, it is significant because the U.S. had a reduced supply of dry skim milk products and yet managed to maintain a significant volume of exports. Total cheese exports in 2006 were 64,737 mt, up 12.6 percent.

Analysis of production, inventory and net trade provides useful information for analyzing the direction of change in commodity prices. But another useful piece of information is commercial disappearance. This is defined as total supply less inventories, government removals, and commercial exports. The result is a measure of what was consumed in the domestic U.S. market. We completed this analysis for fluid milk, American cheese and butter.

Fluid milk consumption was measured directly from total beverage consumption reported monthly by USDA's Agricultural Marketing Service.

Figure 3

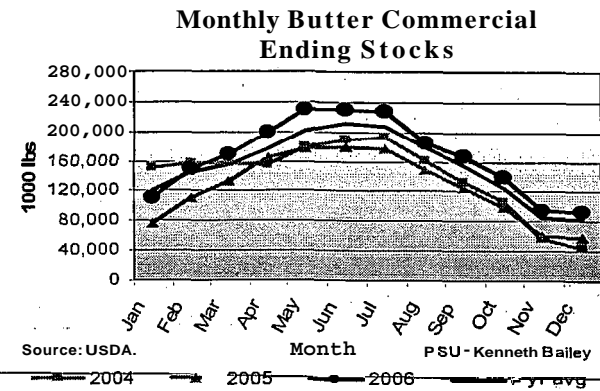
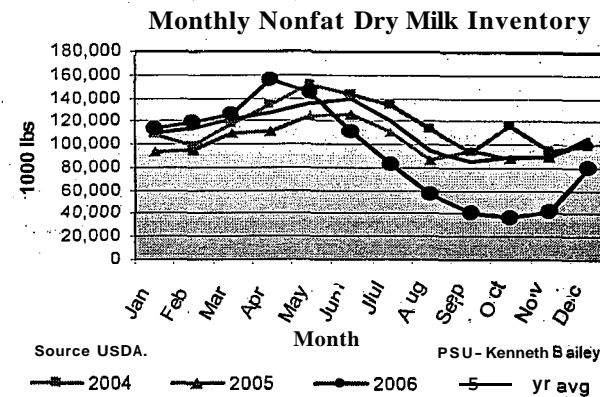


Figure 4



Implied Domestic Consumption

It indicates that for 2006 total beverage consumption rose 0.9 percent. Whole milk consumption fell 2.5 percent from the year before, but this was offset with a 4.4 percent gain in reduced fat milk (2 percent) and an 0.8 percent gain in low fat milk (1 percent). Fat free beverage milk rose just 0.1 percent. Our implied domestic consumption of butter and American cheese showed surprising results for the year. Total butter consumption was 1.66 billion pounds, up 5.8 percent, and American cheese consumption was 3.97 million pounds, up 5.5 percent. Our estimates of supply and demand are new estimates, so errors could be present. But if all our calculations are correct, these figures would indicate that domestic consumption was very strong for butter and American cheese in 2006.

Commodity Prices

There has been a lot of upward movement in the Western prices for nonfat dry milk and dry whey. This was due solely to the market fundamentals of strong exports and declining inventories. Nonfat dry milk prices started the year in 2006 at support levels. For 2007 it rose from \$1.12 per pound the first week of January to \$1.20 by mid-February. Dry whey prices took an even more dramatic rise, from \$0.475 per pound the first week of 2007 to \$0.575 per pound by early February. These higher cash market prices are resulting in higher NASS survey prices and calculated Class III and IV prices.

Block and barrel cheese prices have been showing some price strength in recent weeks. For example, block cheese prices rose from \$1.304 per pound by the fourth week in January to \$1.3225 per pound by the middle of February. A review of the CME milk futures indicates that the implied cheese prices at the CME are expected to rise very rapidly for the remainder of the year. But that will depend on growth in the milk supply, available supplies of cheese, and domestic demand. We are expecting larger cheese plants in the West to come on line, and that should increase cheese production. Butter prices have been relatively stagnant so far this year. Butter prices peaked at \$1.2475 per pound by the fourth week of January and then declined to \$1.2135 per pound by the middle of February.

A review of cash settled butter futures contracts indicates that butter prices are expected to be weak for the first half of 2007. This is due to expected greater supplies of milk fat from both domestic and international sources. The outlook for 2007 NASS and commodity price are presented in Tables 2 and 3. Western nonfat dry milk prices are expected to rise to \$1.15 per pound and Western dry whey prices are forecast to reach a peak of \$0.6150 per pound. These represent very strong prices for nonfat dry milk and dry whey. Whey prices in particular are reaching unprecedented levels due to very tight supply and demand conditions.

"A review of the cash settled butter futures market indicates that butter prices are expected to be weak for much of 2007."

Figure 5

Weekly Nonfat Dry Milk Price, West

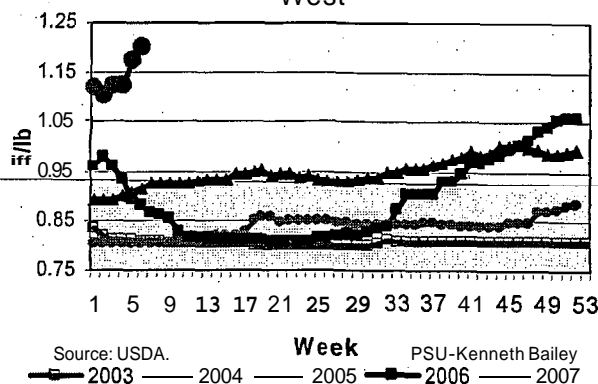
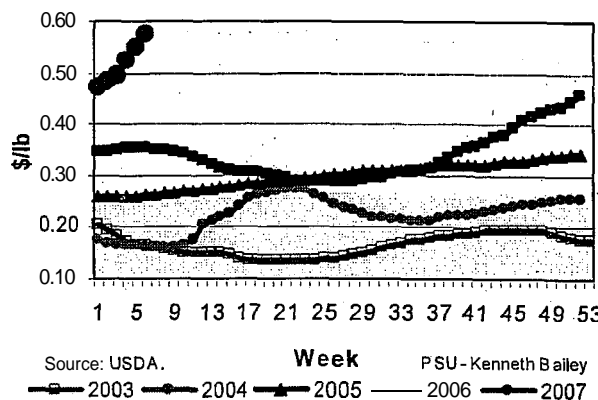


Figure 6

Weekly Dry Whey Price, West



We used the CME cash settled butter futures contracts to forecast butter prices which are expected to gradually rise throughout the year to \$1.4150 per pound by November.

And we used most of the increase in the milk futures contracts to predict cheese prices. Our forecasts are that CME block cheese prices will fall to \$1.34 per pound in March and then gradually rise and peak at \$1.50 per pound by September. Our rationale for this rise is a reduced milk supply and higher protein costs for nonfat dry milk.

FUTURE MARKETS

This month we saw varied activity in between markets. The milk market dropped unexpectedly in the past week with the March contract topping out at \$14.75/contract and falling to \$14.36/contract a week later (Figure 7). Similarly, the contract six months out (the September contract) reached a peak of \$15.95 per cwt and then dropped to \$15.54 per cwt. This drop in milk prices didn't carry over to the grain market, however. The March corn contract is on the rise again, jumping 20 cents per bushel after seeing a slight decrease following its leveling out early this month (Figure 8). Likewise, the March soybean contract has shot up since the plateau in December, moving from 697.25 cents per bushel to 767 cents per bushel (Figure 9).

Figure 7

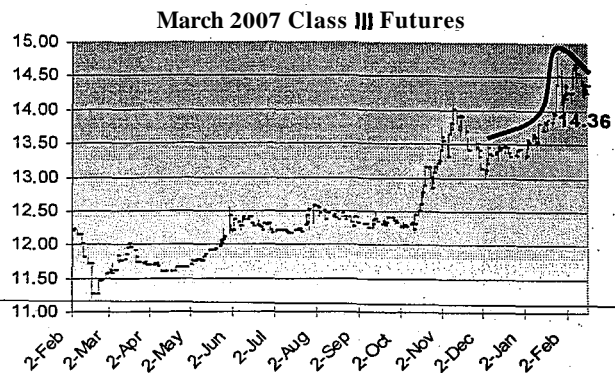


Figure 8

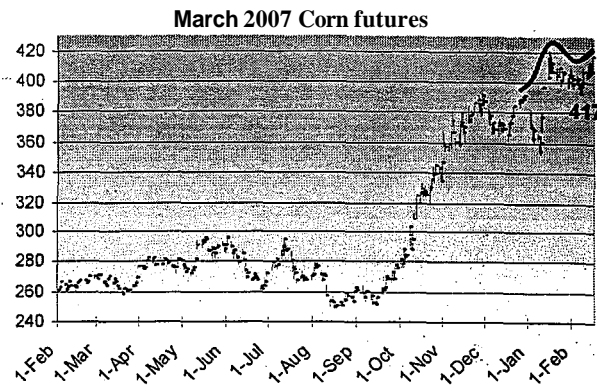
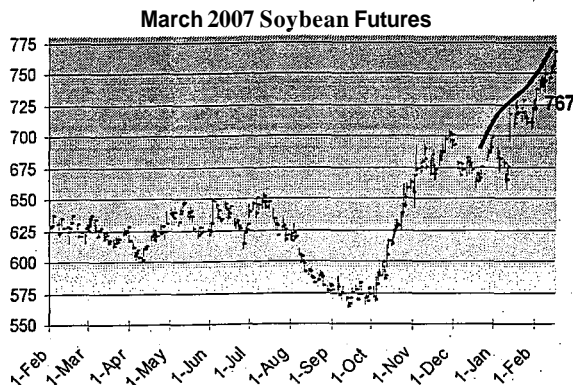


Figure 9



Federal Order and Farm Gate Milk Prices

Our forecasts for Class III, Class IV and the all-milk price are provided in Table 3. In general we are forecasting a near \$3 per cwt rise in Class III and the all-milk price. At first glance this looks like strong prices for milk producers. However, any rise in milk prices must be couched in terms of the higher feed costs. At Penn State we are developing a new milk-feed relationship to evaluate both in terms of gross profits and income over feed costs. Our initial evaluation indicates that last year was a low period for the milk-feed relationship. Ask any milk

producer and they'll tell you that. But this year, looking at the Chicago Board of Trade forecasts for corn and soybean futures, and the Class III futures at the Chicago Mercantile Exchange, we can predict that income over feed costs, or the "milk margin," will be slightly better in 2007 than the normal five-year average. By mid-year this will help producers recoup earlier losses. Still, milk producers will need to use hedging strategies and reevaluate their feed rations if they are to make money in 2007.

Table 1. Forecast of Estimated U.S. Milk Production

	Milk Cows		Milk Yield Per Cow		Milk Production	
	1000 Hd		Pounds	% change	Mil Lbs	% change
2006						
Jan	9,081		1,690	4.0	15,343	5.0
Feb	9,088		1,567	4.2	14,238	5.2
Mar	9,106		1,753	3.9	15,966	5.0
Apr	9,116		1,704	2.3	15,538	3.3
May	9,129		1,760	1.4	16,068	2.4
Jun	9,139		1,677	0.6	15,324	1.6
Jul	9,119		1,663	0.5	15,168	1.2
Aug	9,114		1,653	0.5	15,061	1.1
Sep	9,107		1,590	1.1	14,481	1.5
Oct	9,107		1,631	1.1	14,857	1.7
Nov	9,111		1,594	1.6	14,523	2.2
Dec	9,126		1,669	1.8	15,231	2.5
Annual	9,112		19,951	1.9	181,798	2.7
2007						
Jan	9,128		1,699	0.5	15,507	1.1
Feb	9,129		1,567	0.0	14,304	0.5
Mar	9,123		1,752	-0.1	15,987	0.1
Apr	9,105		1,714	0.5	15,603	0.4
May	9,092		1,781	1.2	16,190	0.8
Jun	9,098		1,693	1.0	15,404	0.5
Jul	9,105		1,694	1.8	15,421	1.7
Aug	9,110		1,681	1.7	15,314	1.7
Sep	9,115		1,612	1.4	14,692	1.5
Oct	9,117		1,660	1.7	15,129	1.8
Nov	9,116		1,610	1.0	14,675	1.0
Dec	9,112		1,689	1.2	15,386	1.0
Annual	9,112		20,150	1.0	183,613	1.0

Forecast period: February - December 2007.

Dairy Outlook was prepared this month by Ken Bailey, Associate Professor of Dairy Marketing and Policy, Mirjana Pajic, Graduate Research Assistant, Irina Mushiya, Editing and Design Assistant, and William Simpson, Research Assistant. If you have comments about this issue, please contact Ken Bailey at bailevk@psu.edu or 814-863-8649.

Dairy Outlook is now published monthly by the Department of Agricultural Economics and Rural Sociology in Penn State's College of Agricultural Sciences.

Table 2. Forecast of Federal Order Prices

	NASS Survey Prices					
	Butter	Cheese	NFDM	Whey	Class III	Class IV
	\$/lb			\$/cwt		
2006						
Jan	1.3387	1.3895	0.9614	0.3416	13.39	12.20
Feb	1.2374	1.2637	0.8833	0.3531	12.20	11.10
Mar	1.1647	1.1612	0.8697	0.3409	11.11	10.68
Apr	1.1436	1.1654	0.8429	0.3054	10.93	10.36
May	1.1635	1.1694	0.8288	0.2805	10.83	10.33
Jun	1.1513	1.2166	0.8221	0.2808	11.29	10.22
Jul	1.1340	1.1793	0.8300	0.2810	10.92	10.21
Aug	1.1990	1.1813	0.8484	0.2965	11.06	10.64
Sep	1.2976	1.2912	0.8537	0.3191	12.29	11.10
Oct	1.2941	1.2721	0.9027	0.3557	12.32	11.51
Nov	1.2693	1.3123	0.9837	0.3800	12.84	12.11
Dec	1.2384	1.3624	1.0225	0.4079	13.47	12.30
Annual	1.2193	1.2470	0.8874	0.3285	11.89	11.06
2007,						
Jan	1.1991	1.3366	1.0677	0.4680	13.56	12.53
Feb	1.2154	1.3422	1.0942	0.5852	14.31	12.82
Mar	1.2384	1.3384	1.1192	0.6002	14.37	13.13
Apr	1.2812	1.3545	1.1485	0.6002	14.54	13.57
May	1.3014	1.3848	1.1485	0.6002	14.85	13.66
Jun	1.3217	1.3915	1.1485	0.6002	14.92	13.74
Jul	1.3495	1.4351	1.1485	0.6002	15.35	13.86
Aug	1.3548	1.4502	1.1485	0.6002	15.49	13.88
Sep	1.3899	1.4920	1.1485	0.5405	15.56	14.03
Oct	1.4102	1.4673	1.1485	0.5405	15.33	14.12
Nov	1.4178	1.4512	1.1485	0.4946	14.91	14.15
Dec	1.4076	1.4351	1.1485	0.4946	14.75	14.10
Annual	1.3239	1.4066	1.1348	0.5604	14.83	13.63

Forecast period: February- December 2007.


Table 3. Forecast of Chicago Mercantile Exchange Prices and the All-milk Price

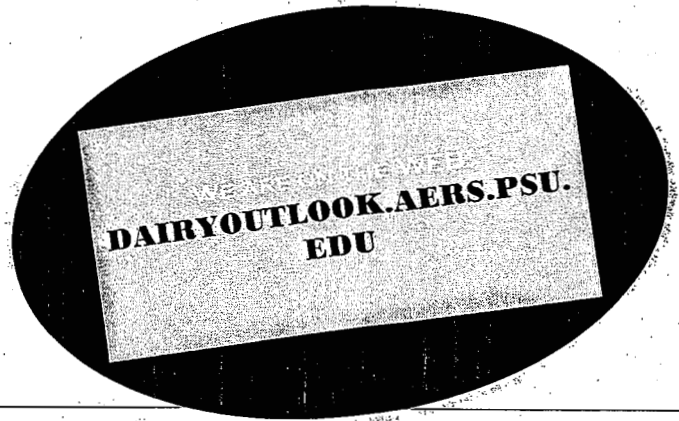
	Chicago Mercantile Exchange						
	40-lb block cheese	Grade AA butter	Western NFDM	Western dry whey	Class III	Class IV	All-milk
	\$/lb	\$/lb	\$/lb	\$/lb	\$/cwt	\$/cwt	\$/cwt
2006							
Jan	1.3335	1.3368	0.95 18	0.349 1	13.39	12.20	14.50
Feb	1.1989	1.1930	0.8707	0.3508	12.20	11.10	13.50
Mar	1.1638	1.1663	0.8222	0.3336	11.1 1	10.68	12.60
Apr	1.1651	1.1632	0.8100	0.3084	10.93	10.36	12.10
May	1.1855	1.1755	0.8086	0.2997	10.83	10.33	12.00
Jun	1.1924	1.1643	0.8109	0.2900	11.29	10.22	11.90
Jul	1.1630	1.1645	0.8228	0.2922	10.92	10.21	11.80
Aug	1.2354	1.3035	0.8692	0.3049	11.06	10.64	12.00
Sep	1.2933	1.3 170	0.9168	0.3298	12.29	11.10	12.90
Oct	1.2347	1.3206	0.9649	0.3640	12.32	11.51	13.50
Nov	1.3745	1.2915	1.0057	0.4043	12.84	12.11	13.90
Dec	1.3223	1.2405	1.0523	0.4406	13.47	12.30	14.10
Annual	1.2385	1.2364	0.8922	0.3390	11.89	11.06	12.90
2007							
Jan	1.3180	1.2248	1.1268	0.5046	13.56	12.53	14.40
Feb	1.3420	1.2 150	1.0945	0.6150	14.31	12.82	15.23
Mar	1.3380	1.2378	1.1200	0.6150	14.37	13.13	15.38
Apr	1.3550	1.2800	1.1500	0.6150	14.54	13.57	15.64
May	1.3870	1.3000	1.1500	0.6 150	14.85	13.66	15.85
Jun	1.3940	1.3200	1.1500	0.6150	14.92	13.74	15.92
Jul	1.4400	1.3475	1.1500	0.6150	15.35	13.86	16.20
Aug	1.4560	1.3528	1.1 500	0.6150	15.49	13.88	16.29
Sep	1.5000	1.3875	1.1 500	0.5500	15.56	14.03	16.39
Oct	1.4740	1.4075	1.1 500	0.5500	15.33	14.12	16.29
Nov	1.4570	1.4150	1.1500	0.5000	14.91	14.15	16.07
Dec	1.4400	1.4050	1.1 500	0.5000	14.75	14.10	15.96
Annual	1.4084	1.3244	1.1409	0.5758	14.83	13.63	15.80

Forecast period: February- December 2007.

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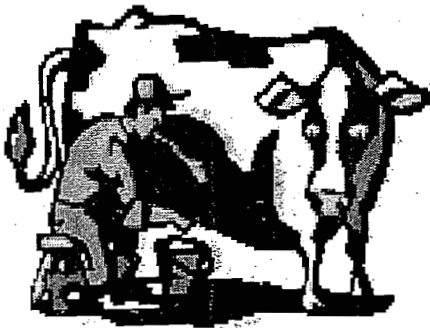


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