A UW-River Falls, UW-Extension, and the Center for Dairy Profitability Report

AN ANALYSIS OF HOW WISCONSIN AGFA DAIRY FARMS RESPONDED TO THE LOWER MILK PRICE OF 2006

by

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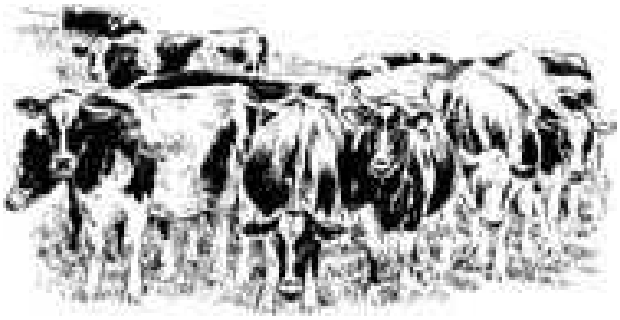

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I. INTRODUCTION

The average milk price received was lower in 2006 than in 2005. For farms who submitted 2005 and 2006 financial data to the UW-Extension and the Center for Dairy Profitability Agriculture Financial Advisor (AgFA) program by June 1, 2007 – the average gross milk price received fell by 14.43 percent from $15.86/cwt in 2005 to $13.57/cwt in 2006.

A decrease in milk price forces producers to cut expenses. This report shows the results of a study comparing how the 20 highest profit (as measured by cost basis Rate of Return on Assets) and 162 lower profit WI AgFA dairy farms responded to the decrease in gross milk price received. By understanding how Wisconsin dairy farm managers responded to lower milk prices, farm managers and farm management advisors may be better prepared for future periods of low milk prices.

II. METHODS

The financial information for both the 20 high profit farms (HIGH PROFIT FARMS) and the 162 lower profit farms (LOWER PROFIT FARMS) were obtained by accessing the web-based Agriculture Financial Adviser located at:

http://cdp.wisc.edu/AgFA.htm.

In order for a farm to be included in this particular study, the farms had to have their 2005 and 2006 financial records submitted to AgFA by June 1, 2007. The vast majority of these farms would have followed the January to December calendar year reporting schedule, as opposed to the July to June business year reporting schedule.

The farms were sorted into the high profit and low profit farm categories by their 2006 cost basis Rate of Return on Assets (ROROA). The 20 high profit farms (HIGH PROFIT FARMS) had a cost basis ROROA in 2006 that was greater than or equal to 7 percent. The 162 lower profit farms (LOWER PROFIT FARMS) had a cost basis ROROA in 2006 of less than 7 percent.

For this study, three areas were examined. First, in order to have an understanding as to the similarities and differences of the two farm groups, the farms' average descriptive and overall profitability statistics were examined and compared. Second, price and revenue information were analyzed for both farm groups in order to show the impact of the lower milk price on total revenue and to compare how the managers adjusted their revenue generation. Third, expense measures were examined in order to discern whether the

HIGH PROFIT FARMS and LOW PROFIT FARMS adjusted their input expenditures and, if so, how. Because overall input prices increased from 2005 to 2006, 2006 input expenditures were adjusted to 2005 levels.[2]

III. FARM DESCRIPTIVE AND OVERALL PROFITABILITY STATISTICS

The herd sizes of the two farm groups did not differ dramatically (Table 1). In 2006, the HIGH PROFIT FARMS milked 114 cows, and the LOWER PROFIT FARMS milked 106 cows. From 2005 to 2006, both farm groups slightly increased their herd size.

While there was little difference in the 2006 HIGH PROFIT FARMS and LOW PROFIT FARMS milk sold per cow, their respective changes from their 2005 production levels were different. Microeconomic theory contends that as milk prices decline and/or input costs increase, a profit maximizing dairy producer will reduce milk output. The HIGH PROFIT FARMS, whether by conscientious effort or other means, decreased their milk per cow in 2006. The HIGH PROFIT FARMS sold 21,721 pounds of milk per cow in 2006, down 606 pounds from their 2005 level. The LOWER PROFIT FARMS increased their production per cow by 22 pounds in 2006, selling 21,561 pounds of milk per cow.

TABLE 1. FARM DESCRIPTIVE STATISTICS

Measure	HIGH PROFIT FARMS (20 Farms)			LOWER PROFIT FARMS (162 Farms)		
	2006	2005	Change	2006	2005	Change
Herd Size	114	112	2	106	103	3
Milk Sold / cow (lbs)	21,721	22,327	-606	21,561	21,539	22
Crop Acres	334	343	-9	361	353	8
Crop Acres / cow	2.93	3.06	-0.13	3.41	3.43	-0.02
Market Value Assets / cow	$8,559	$8,272	$287	$11,559	$11,868	-$269

The HIGH PROFIT FARMS also modestly decreased their crop acres by an average of 9 acres in 2006 to 334 acres. Conversely, the LOWER PROFIT FARMS increased their crop acres from 353 in 2005 to 361 acres in 2006.

The HIGH PROFIT FARMS were able to operate with a much lower investment per cow than the LOW PROFIT FARMS. At the end of 2006, the HIGH PROFIT FARMS had an assets per cow value of $8,559, which was $3,040 lower than the assets per cow of the LOW PROFIT FARMS.

In terms of profitability (Table 2), the HIGH PROFIT FARMS earned a higher:

- Net Farm Income from Operations (NFIO) per cow,

[2] The 2006 Adjusted Input Expenditure = 2006 Actual Input Expenditure * (2005 USDA-NASS All Farm Prices Paid Index / 2006 USDA-NASS All Farm Prices Paid Index). The 2005 USDA-NASS All Farm Prices Paid Index = 142. The 2006 USDA-NASS All Farm Prices Paid Index = 148. These indices were obtained at http://www.nass.usda.gov/Charts_and_Maps/graphics/data/allprpd.txt.

- NFIO per hundredweight,
- Cost basis ROROA, and
- Market value ROROA.

The HIGH PROFIT FARMS actually experienced a greater decrease in NFIO per cow than the LOWER PROFIT FARMS. The HIGH PROFIT FARMS NFIO per cow decreased by $443, while the LOW PROFIT FARMS NFIO per cow decreased by $423. The two farm groups had an equivalent decrease in NFIO per hundredweight ($1.96). The HIGH PROFIT FARMS earned $72 more NFIO per cow ($463 as opposed to $391) and $0.30 more NFIO on a per hundredweight basis ($2.13 as opposed to $1.83) in 2006.

TABLE 2. OVERALL PROFITABILITY STATISTICS

Measure	HIGH PROFIT FARMS (20 Farms)			LOWER PROFIT FARMS (162 Farms)		
	2006	**2005**	**Change**	**2006**	**2005**	**Change**
NFIO / Cow	$463	$906	-$443	$391	$814	-$423
NFIO / cwt	$2.13	$4.09	-$1.96	$1.83	$3.79	-$1.96
Cost Basis ROROA (%)	13.72	20.49	-6.77	1.76	5.00	-3.24
Market Value ROROA (%)	5.25	9.87	-4.62	2.42	5.81	-3.39

The LOWER PROFIT FARMS slightly lower NFIO values and higher assets per cow values hindered the LOWER PROFIT FARMS ability to earn a ROROA that was competitive with the HIGH PROFIT FARMS. The LOWER PROFIT FARMS cost basis ROROA declined from 5.00 percent in 2005 to 1.76 percent in 2006, and their market value ROROA declined from 5.81 in 2005 to 2.42 percent in 2006. The HIGH PROFIT FARMS cost basis ROROA decreased from 20.49 percent in 2005 to 13.72 percent in 2006. Their market value ROROA decreased from 9.87 percent in 2005 to 5.25 percent in 2006.

IV. COMPARING PRICE AND REVENUE MEASURES

Total revenue per cow in 2006 fell by $495 for the HIGH PROFIT FARMS and $432 for the LOWER PROFIT FARMS (Table 3). Despite the sharper drop in total revenue per cow for the HIGH PROFIT FARMS, they still maintained a higher total revenue per cow as compared to the LOWER PROFIT FARMS ($3,853 vs. $3,814). This $39 difference in total revenue per cow helps to explain some of the $72 difference between the HIGH PROFIT FARMS and LOW PROFIT FARMS NFIO per cow.

The HIGH PROFIT FARMS earned a higher milk price in both 2005 and 2006, and they experienced a smaller decrease in milk price received between the two years. This may indicate that the HIGH PROFIT FARMS emphasized better milk quality, higher component levels, and/or that they were better marketers of their milk in both the good and bad price year.

TABLE 3. SELECT PRICE AND REVENUE MEASURES

Measure	HIGH PROFIT FARMS (20 Farms)			LOWER PROFIT FARMS (162 Farms)		
	2006	2005	Change	2006	2005	Change
Total Revenue / cow	$3853	$4348	-$495	$3814	$4246	-$432
Total Revenue / cwt	$17.74	$19.48	-$1.74	$17.69	$19.71	-$2.02
Milk Price Received / cwt	$13.54	$15.84	-$2.30	$13.31	$15.67	-$2.36
Milk Revenue / cow	$2940	$3537	-$597	$2869	$3375	-$506
Crop Revenue / cow	$109	$37	$72	$241	$149	$92
Crop Revenue / acre	$37	$12	$25	$71	$43	$28
Raised Breeding Livestock Revenue /cow	$235	$207	$28	$148	$120	$28
Program Payments / cow	$208	$195	$13	$198	$196	$2
Custom Hire Revenue / cow	$33	$13	$20	$33	$43	-$10

Both the HIGH PROFIT FARMS and the LOWER PROFIT FARMS were able to capitalize on the good 2006 crop prices. The HIGH PROFIT FARMS crop revenues increased by $25 per acre and $72 per cow. The LOW PROFIT FARMS increased their crop revenues $28 per acre and $92 per cow. Despite the LOW PROFIT FARMS being able to generate more crop revenue per cow and per acre than their high profit counterparts, it obviously wasn't enough to place them in the high profit category.

Both the HIGH PROFIT FARMS and LOWER PROFIT FARMS increased their raised breeding livestock revenue by $28 per cow. Nevertheless, the HIGH PROFIT FARMS generated much higher raised breeding livestock revenue ($235) than the LOWER PROFIT FARMS ($148). This large difference may suggest that the HIGHER PROFIT FARMS sold more raised livestock for dairy purposes than the LOWER PROFIT FARMS.

The HIGH PROFIT FARMS also earned slightly more in government program revenue. They earned $208 per cow in program payments, up $13 per cow from their 2005 level. The LOWER PROFIT FARMS earned $198 per cow in program payments, a $2 per cow increase.

Although the HIGH PROFIT FARMS and LOW PROFIT FARMS generated the same custom hire income per cow ($33) in 2006, the HIGH PROFIT FARMS seemed to emphasize this enterprise more in 2006 while the LOWER PROFIT FARMS placed less emphasis on it. The HIGH PROFIT FARMS increased their custom hire income by $20 per cow, and the LOWER PROFIT FARMS decreased their custom hire income by $10 per cow.

V. COMPARING INPUT EXPENDITURES

Tables 4 and 5 show input expenditures on a per cow and per hundredweight basis. The expenses of 2006 were adjusted to reflect 2005 input prices. Both the HIGH PROFIT FARMS and the LOWER PROFIT FARMS were able to decrease their costs on a per cow and per hundredweight basis.

On a per cow basis, the HIGH PROFIT FARMS reduced their total expense per cow by $189 (Table 4). They decreased their basic 4 dairy expenditure (breeding, other dairy and livestock, purchased feed, and veterinary expenses) by $91 per cow. Their basic 4 crop expenditure (chemicals, fertilizer and lime, seed and other crop expenses) decreased by $50 per cow. Paid labor expense increased by $7 per cow. All "other expenses" decreased by $56 per head. The HIGH PROFIT FARMS ended up with a total expense per cow of $3,253, which was $31 lower than the LOWER PROFIT FARMS.

TABLE 4. INPUT EXPENDITURES PER COW IN 2005 DOLLARS

Measure	HIGH PROFIT FARMS (20 Farms)			LOWER PROFIT FARMS (162 Farms)		
	2006	**2005**	**Change**	**2006**	**2005**	**Change**
Basic 4 Dairy Expenditure / cow	**$1,001**	**$1,092**	**-$91**	**$920**	**$1,042**	**-$122**
Breeding Fees / cow	$45	$52	-$7	$52	$56	-$4
Other Dairy and Livestock Expense / cow	$131	$142	-$11	$136	$132	$4
Purchased Feed / cow	$651	$735	-$84	$617	$742	-$125
Veterinary Expense / cow	$112	$110	+$2	$115	$111	+$4
Basic 4 Crop Expenditure / cow	**$180**	**$230**	**-$50**	**$264**	**$327**	**-$62**
Paid Labor Expense / cow	**$471**	**$464**	**$7**	**$425**	**$436**	**-$12**
Other Expenses / cow	**$1,600**	**$1,656**	**-$56**	**$1,675**	**$1,626**	**+$49**
Total Expense / cow	**$3,253**	**$3,442**	**-$189**	**$3,284**	**$3,431**	**-$147**

Although the LOWER PROFIT FARMS could not achieve the total expense per cow of the HIGH PROFIT FARMS, they did reduce their expenditures by $147 per cow. In fact, the LOWER PROFIT FARMS experienced a larger reduction in the major expense categories than the HIGH PROFIT FARMS. They reduced their basic 4 dairy expenditure per cow by $122, their basic 4 crop expenditure per cow by $62, and their paid labor expense by $12 per cow. The LOWER PROFIT FARMS were unable, however, to reduce their expenditures for all of the "other expenses" on a per cow basis. These expenses increased by $49 per cow.

On a per hundredweight basis (Table 5), the HIGH PROFIT FARMS earned a total expense per hundredweight of $14.99, which was $0.24 lower than the LOWER PROFIT FARMS total expense per hundredweight. Because the LOWER PROFIT FARMS milk

production per cow did not go down in 2006, they actually experienced a larger drop in total expenses per hundredweight (-$0.70) than the HIGH PROFIT FARMS (-$0.54).

The fact that the LOWER PROFIT FARMS were able to slightly increase their production in 2006 with less total expenditures is interesting. While they were successful in decreasing their costs in the lower price year, it is unfortunate that they did not achieve this cost efficiency in 2005. If the LOWER PROFIT FARMS produced with their 2006 cost efficiency in 2005, they would have enjoyed a $0.70 per hundredweight and $147 per cow higher NFIO. This would have made their NFIO per hundredweight and per cow higher than those earned by the HIGHER PROFIT FARMS in 2005.

TABLE 5. INPUT EXPENDITURES PER HUNDREDWEIGHT IN 2005 DOLLARS

Measure	HIGH PROFIT FARMS (20 Farms)			LOWER PROFIT FARMS (162 Farms)		
	2006	2005	Change	2006	2005	Change
Basic 4 Dairy Expenditure / cwt	**$4.33**	**$4.69**	**-$0.36**	**$4.27**	**$4.84**	**-$0.57**
Breeding Fees / cwt	$0.21	$0.24	-$0.03	$0.24	$0.25	-$0.01
Other Dairy and Livestock Expense / cwt	$0.60	$0.64	-$0.04	$0.63	$0.62	$0.01
Purchased Feed / cwt	$3.00	$3.32	-$0.32	$2.86	$3.44	-$0.58
Veterinary Expense / cwt	$0.51	$0.49	$0.02	$0.53	$0.52	$0.01
Basic 4 Crop Expenditure / cwt	**$0.83**	**$1.04**	**-$0.21**	**$1.23**	**$1.52**	**-$0.29**
Paid Labor Expense / cwt	**$2.17**	**$2.09**	**$0.08**	**$1.97**	**$2.03**	**-$0.06**
Other Expenses / cwt	**$7.66**	**$7.71**	**-$0.05**	**$7.77**	**$7.55**	**$0.22**
Total Expense / cwt	**$14.99**	**$15.53**	**-$0.54**	**$15.23**	**$15.93**	**-$0.70**

VI. SUMMARY AND CONCLUSIONS

The milk price decrease from 2005 to 2006 greatly reduced the profitability of both the HIGH PROFIT FARMS and the LOWER PROFIT FARMS. In the lower milk price year of 2006, the HIGH PROFIT FARMS decreased their milk production per cow while the LOWER PROFIT FARMS increased their milk production per cow slightly. Although the differences between the HIGH PROFIT FARMS and LOWER PROFIT FARMS NFIO per cow and per hundredweight were rather small, the LOWER PROFIT FARMS higher assets per cow hindered their ability to generate a competitive ROROA in 2006. Thus, the LOWER PROFIT FARMS could improve their asset utilization.

The HIGH PROFIT FARMS were better at generating revenue with their assets in both the good and bad milk price years. They earned a higher milk price in both years and suffered a lower milk price reduction in 2006 than the LOWER PROFIT FARMS.

Although the HIGH PROFIT FARMS had lower crop revenue per cow and per acre than the LOWER PROFIT FARMS, they were able to generate more total revenue per cow and per hundredweight than the LOWER PROFIT FARMS. The HIGH PROFIT FARMS earned more milk revenue per cow, more breeding livestock revenue per cow (possibly due to selling more raised breeding livestock for dairy purposes) and slightly higher program payments per cow. The HIGH PROFIT FARMS also appeared to look to other revenue sources in the low price year, as they increased their custom hire revenue per cow while the LOWER PROFIT FARMS reduced their custom hire revenue per cow.

All input expenditures were adjusted to reflect 2005 input prices. The HIGH PROFIT FARMS had a lower total expense per cow and per hundredweight than their counterparts in both 2005 and 2006. Nevertheless, the LOWER PROFIT FARMS were able to achieve a greater decrease in their cost of production measures. The LOWER PROFIT FARMS were able to decrease their total expenses per cow by $147 and their total expenses per hundredweight by $0.70. Given that the LOWER PROFIT FARMS were able to slightly increase their milk per cow in 2006, the LOWER PROFIT FARMS could have been much more cost efficient in 2005. Had they achieved the 2006 cost efficiency in 2005, they would have earned more NFIO per cow and per hundredweight than the HIGH PROFIT FARMS.

Overall, it appears that HIGH PROFIT FARMS were better at utilizing assets, generating revenue and were more cost efficient in both the good milk price year and bad. For the LOWER PROFIT FARMS to have been more competitive in both 2005 and 2006, they would have needed to do at least three things. First, they needed to improve their asset utilization. Second, they needed to enhance their revenue generating ability. Third, while the LOWER PROFIT FARMS emphasized cost efficiency in the low milk price year, they should have also emphasized cost efficiency in the good milk price year, too.