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# Dairy Risk Management Education

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## Understanding Your Milk Check: A Guide for Pennsylvania Dairy Producers

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As of January 2000, Pennsylvania dairy producers shipping milk to plants regulated by federal milk marketing orders will receive milk checks based in large part on milk components and quality. The major sources of revenue on a typical milk check will include 1) milk components, 2) revenue from federal orders, and 3) market and government premiums. This new method of payment will be more market driven as component values will rise and fall with changing milk markets. It will also be more performance driven as producers will receive more or less money based in part on the quality of milk they deliver. The objective of this report is to help Pennsylvania dairy producers better understand how they are paid, where the prices come from, and what factors they control.

### Building Blocks of the Milk Check

A typical milk check is presented in Table 1. You will note that there is not just one price for milk. In fact, there are 7 separate prices on today's milk check:

1. Butterfat price, \$/lb
2. Protein price, \$/lb
3. Other solids price, \$/lb
4. Producer Price Differential, \$/cwt
5. Volume premiums, \$/cwt
6. Quality premium, including SCC, \$/cwt, and
7. Market over-order premiums, \$/cwt.

Items 1-3 represent prices for the milk components produced by the dairy farmer. These prices are quoted in dollars per pound and are announced each month by USDA. Thus farmers are paid for each pound of milk components they market. Item 4 is the Producer Price Differential (PPD) which represents the additional value paid to farmers from the federal order pool (more about this later). This is also announced by the USDA and is paid on the basis of volume of milk delivered. Items 5 and 6 represent volume and quality premiums that are paid by the milk handler (the plant that picks up the milk). This is paid on the basis of volume and quality of milk delivered. The final price, item 7, represents over-order premiums. These are based on the premiums for fluid milk set by the Pennsylvania Milk Marketing Board (PMMB) as well as other premiums determined by market conditions.

### Where Do the Prices Come From?

For many Pennsylvania dairy producers, milk pricing seems to be a mystery. However, because of the reforms that have taken place in federal orders, milk pricing is very transparent. Milk producers today can not only understand how their milk check adds up, but where the numbers come from.

Most Pennsylvania dairy producers ship their milk into one of two federal milk marketing orders.

Those orders are the Mideast order 33 (Western Pennsylvania) and the Northeast order 1 (Eastern Pennsylvania). Some dairy producer's ship their milk to plants located physically outside of Pennsylvania. These plants may in fact be qualified on another federal order (i.e. the Appalachian order no. 5 or Southeast order no. 7).

Much of the pricing information on the milk check is announced by a federal Market Administrator that is employed by the USDA. For example, the component prices and PPD are announced during the month by the Northeast and Mideast Market Administrator's. The check in Table 1 was derived from information announced from the Northeast federal order for July 2004. This information is summarized in Table 2.

There are three separate price announcements that are made during the course of each month by USDA that are relevant to Pennsylvania dairy producers. The first is the "Advanced Pricing Factors." This sets the minimum price for Class I fluid milk products and Class II skim for each of the federal milk marketing orders. It is announced prior to the relevant month. For example, the advance pricing factors for July 2004 were announced on June 18.

The next major report is the "Class and Component Prices." This report releases the component prices for butterfat, protein and other solids as reported on a producers milk check. This report also contains the monthly average commodity values for cheese, butter, nonfat dry milk, and dry whey. These commodity values are used to derive the component values for butterfat, protein and other dairy solids. Information from this report (calculations for class prices) is also ultimately used in the calculation of the PPD. This report is announced on the last day of the month or by the fifth of the following month. For example, the July 2004 Class and Component Prices report was announced on July 30, 2004.

The last major report produced by USDA and of interest to Pennsylvania dairy producers is the "Pool Price Announcement." This report is announced by each of the Market Administrators for each federal order pool. It not only calculates

the value of the federal order pool, but also calculates the PPD. This report is usually announced in the middle of the following month. For example, the July 2004 Pool Price Announcement was released August 12. This information forms the basis of a producer's milk check which they will receive a few days later.

## **Review Example Milk Check**

### *Milk Components*

To understand the milk check in Table 1, let's start with a review of milk components. Nearly every load of milk shipped from a dairy farm to a plant regulated by a federal milk marketing order is tested for the following milk components: butterfat, protein, and other dairy solids. At the end of the month a summary is calculated for each producer and the average component levels appear on the milk check. These component tests are used to calculate the pounds of components delivered. For example, the check in Table 1 shows a butterfat average of 3.85 percent, protein of 3.0 percent, and other solids of 5.56 percent, as well as the pounds of components delivered. In addition, the prices for these components are printed on the milk check based on the announcement from the federal order. One can then multiply the component tests (percentages) times the volume of milk delivered in order to derive the pounds of dairy components shipped. These pounds of dairy components are then multiplied by the component prices in order to generate revenue. Thus producers are paid directly for the pounds of components they ship. For example, the producer in Table 1 received \$7,909 for 3,850 pounds of butterfat, \$7,088 for 3,000 pounds of protein, and \$583 for 5,560 pounds of other dairy solids shipped during the month of July.

It is important that producers understand that while every producer in a federal order will get the same component prices each month, they will all get different Class III values. At the bottom of Table 1 we have computed the Class III value of \$15.58 per cwt. This reflects the sum of the component prices times the component percentages (or the sum of component revenue divided by cwts of milk

shipped). Each producer will get a different Class III value since the component levels vary from farm to farm. While this value is not computed on most Pennsylvania milk checks, dairy producers can easily compute it using the following formulas:

Class III value = % butterfat\*butterfat price(\$/lb) + % protein\*protein price(\$/lb) + % other solids\*other solids price (\$/lb), or

Class III value = [sum(component price(\$/lb)\*pounds of components shipped)]/cwt of milk shipped

### ***Producer Price Differential***

The next major price on the milk check is the PPD. In this example the PPD is \$2.79 per cwt for Boston. This price was computed by the Northeast Market Administrator for July 2004 as follows:

PPD = Northeast Uniform Blend Price – Class III Price

\$2.79 = \$17.64 - \$14.85

The PPD was created by the USDA as a way to separate the value of milk into two buckets: one to reflect milk components, which vary from farm to farm, and the other to reflect the additional value created from the federal order. The Class III price reflects the market value of milk components at standard component test levels. For the month of July, the pool value (\$17.64 per cwt) was greater than the market value of components (\$14.85 per cwt). This difference was the PPD (\$2.79).

Not every producer shipping milk into a federal order will get the same PPD. The producer in our example in Table 2 faces a negative location adjustment of \$0.45 per cwt. Thus our producer received \$2.34 per cwt (\$2.79-\$0.45), not \$2.79 per cwt as announced in Boston. That's because the announced PPD's are subject to a location adjustment that was set by the Congress to reflect different values for fluid milk across the country. In fact, every county in the U.S. has a different fluid milk value (Class I differential). In our example, fluid milk has a lower Class I value in Carlisle, Pennsylvania (where our farm is located)

than in Boston, Massachusetts, where the PPD was announced.

### ***Other Premiums and Deductions***

So far the gross value of milk in our example is simply the producer's Class III value at test (\$15.58), plus the location adjusted PPD (\$2.34), or \$17.92 per cwt. However, our example also includes an additional \$0.70 per cwt to reflect the value of premiums volume, quality, and over-order premiums). Together the gross value of milk is \$18.62 per cwt.

One premium/deduction that is not reflected in our example milk check is for Somatic Cell Count (SCC). Dairy producers shipping milk into the Mideast federal order receive a premium for the level of their SCC if it falls below 350,000 cell count. A SCC count above this level will realize a deduction.

Of course dairy producers also face deductions on the milk check from the gross milk price. The major deductions are the advance payments, federal and local advertising, and transportation (hauling) and other marketing fees. The advance payment is simply a half month's milk shipments times a set price. This price is usually the lower of the Class III or IV price from the federal order from the previous month. It is simply a partial monthly payment.

On most milk checks deductions are usually presented as a lump sum, not in the manner presented in Table 1. That means a typical Pennsylvania dairy producer may not know the per unit costs for these deductions. In our example these costs are for advertising (\$0.15 per cwt), hauling (\$0.65 per cwt), and cooperative/marketing fees (\$0.10 per cwt). But dairy producer can easily compute these. In our example the per-unit costs of these deductions (not including the advance payment) is \$0.90 per cwt.

### ***Net Check/Mailbox Price***

So what did our example dairy producer get paid for their milk? There are two answers to this question. First let's look at the "net check." This simply reflects how many dollars the producer

received from the milk check. It is equal to gross sales less all deductions, including the large deduction for the advance payment.

Of greater interest is the mailbox milk price. This is equal to the gross price less marketing deductions such as advertising, hauling, and coop/marketing fees for the entire month. This is in effect the take home price of milk for the month reflected in dollars per cwt. Note that the mailbox price *does not* include other deductions for advance payments, forward contracts, or assignments. In our example, the mailbox milk price for July was \$17.72 per cwt.

### **What Factors Can I Control?**

The milk check contains a great deal of management information that is of value to Pennsylvania dairy producers. Of greatest interest should be those factors that are directly under the control of the producer. These are as follows:

- **Milk Volume.** Dairy producers are clearly in charge of how much milk they ship each month. The larger the volume of milk produced and shipped, the bigger the milk check. That's because the component prices are applied to the pounds of components shipped, and the PPD is applied to the volume of milk shipped. In addition, some milk handlers provide a volume premium for milk if a producer exceeds a certain level of milk shipments each month.
- **Component Levels.** For a given volume of milk, a producer will receive a higher Class III value if their components are greater than that of their neighbors. This is particularly true for protein and butterfat given the value of these prices. Likewise, a producer will face a substantial deduction each month if their components are below average.

- **SCC.** Producers who ship milk into the Mideast federal order receive a premium/deduction for SCC. Thus producers have an incentive to track and manage their SCC score. A second incentive is that research indicates that milk production will be depressed if a cow has a high SCC score.
- **Overall milk quality.** Most milk handlers in Pennsylvania have pricing incentives for high quality milk.

### **Conclusions**

The milk business is much more competitive today when one considers the degree of competition in the market place to supply consumer's high quality milk. Pennsylvania dairy producers today have a strong incentive to better manage their component levels and overall milk quality. The milk check provides much of the information needed to carefully monitor these important pricing incentives.

Table 1. Example Milk Check, Carlisle, Pennsylvania

Farm: Smith and Family Dairy Farm		Check no. 236587		
Producer: George and Mary Smith		Date: August 17, 2004		
Statement for July 1 - July 31, 2004				
Component testing:				
Percent butterfat:	3.85		SCC:	200
Percent protein:	3.00		BACT:	3
Percent other dairy solids:	5.56		PI:	8
	Lbs	Rate	Description	Farm Total
Grade A pounds	100,000			
Grade A butterfat	3,850	2.0543	\$/lb butterfat	7,909
Grade A protein	3,000	2.3625	\$/lb protein	7,088
			\$/lb other	
Grade A other solids	5,560	0.1048	solids	583
Producer Price Diff @Boston	100,000	2.7900	\$/cwt	2,790
Loc adj to PPD	100,000	-0.4500	\$/cwt	-450
Other premiums:				
Volume	100,000	0.1500	\$/cwt	150
Quality	100,000	0.1000	\$/cwt	100
PMMB Over-order Premium	100,000	0.4500	\$/cwt	450
Gross Amount		18.6192	\$/cwt	18,619
Total Deductions			\$/cwt	-7,760
Net Check			\$/cwt	10,859
Your Mailbox Price		17.72	\$/cwt	17,719
Deductions:				
Advance payment	50,000	13.72	\$/cwt	6,860
Advertising	100,000	0.15	\$/cwt	150
Hauling	100,000	0.65	\$/cwt	650
Cooperative/marketing fees	100,000	0.10	\$/cwt	100
Total Deductions				7,760
Class III Value @ Test	100,000	15.58	\$/cwt	15,579

Table 2. Northeast Federal Milk Marketing Order No. 1, July 2004 Price Announcements

Producer Milk	Percent	Mil. Lbs.	Class Price	Units
Class I	43.4	865.4	21.20	\$/cwt
Class II	19.2	383.0	14.00	\$/cwt
Class III	25.0	499.1	14.85	\$/cwt
Class IV	12.4	248.5	13.31	\$/cwt
Total Producer Milk	100.0	1,996.0		
Producer Price Differential (Boston)			2.79	\$/cwt
Statistical Uniform Price (Boston)			17.64	\$/cwt
Component Values:				
Protein			2.3625	\$/lb
Butterfat			2.0543	\$/lb
Other Solids			0.1048	\$/lb
Commodity Prices:				
Butter			1.8269	\$/lb
Cheese			1.5695	\$/lb
Nonfat Dry Milk			0.8513	\$/lb
Dry Whey			0.2607	\$/lb

Sources: Federal Milk Order No. 1:

URL: [http://www.fmmone.com/Northeast\\_Order\\_Prices/NE\\_Prices\\_main\\_new.htm#Uniform](http://www.fmmone.com/Northeast_Order_Prices/NE_Prices_main_new.htm#Uniform)

### Internet Resources

Federal Orders Relevant to Pennsylvania:

Federal Order No. 1: <http://www.fmmone.com/>

Mideast Order No. 33: <http://www.fmmaclev.com/>

Appalachian Order 5: <http://members.aye.net/~usda/>

Current Federal Order Price Announcements (requires Adobe Acrobat):

Advanced prices: <http://www.ams.usda.gov/dyfmoms/mib/advanprc.pdf>

Class and component prices: <http://www.ams.usda.gov/dyfmoms/mib/classprcacnmt.pdf>



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