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MIDEAST MARKETING AREA
Federal Order 33

**ANALYSIS OF COMPONENT TESTS FOR PRODUCER MILK
ASSOCIATED WITH THE MIDEAST MARKETING AREA**

2008

Staff Paper
10-01

Prepared by:
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February 2010

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Analysis of Component Tests for Producer Milk Associated with the Mideast Marketing Area 2008

John Newton

This staff paper details market statistics for the component levels of producer milk associated with the Mideast Marketing Area, Federal Order 33, for 2008. For 2008, the weighted average butterfat test was 3.70 percent; the weighted average protein test was 3.06 percent; the weighted average other solids test was 5.70 percent; and the weighted average SCC level was 259. Additionally, weighted average milk value was \$18.09 per hundred for 2008. Random entity and fixed time effect models were used to re-estimate the elasticities among components. Model results indicated that component elasticities are considerably less than previously estimated.

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ANALYSIS OF COMPONENT TESTS FOR PRODUCER MILK ASSOCIATED WITH THE MIDEAST MARKETING AREA

2008

By John Newton

Introduction

This study analyzes the component levels of milk marketed by producers associated with the Mideast Marketing Area, Federal Order 33, for 2008. The milk components analyzed in this study include butterfat, protein, other solids and somatic cell count (SCC).¹ These components are selected because the Mideast Marketing Area uses multiple component pricing (MCP) as the basis for establishing the value of milk pooled on the order.²

Producer payrolls were analyzed to determine how component levels and milk values varied relative to production region, producer size and season. An effort was also made to identify the statistical relationship among components in herd level milk.

For 2008 there were 8,775 producers associated with the Mideast Marketing Area that were included in this analysis. The geographical area captured by the data population includes Iowa, Illinois, Indiana, Kentucky, Maryland, Michigan, Minnesota, New York, Ohio, Pennsylvania, Tennessee, Virginia, Vermont, Wisconsin, West Virginia North Carolina and Massachusetts. Of those states, Indiana, Kentucky, Michigan, Ohio, Pennsylvania and West Virginia are located or partially located within the Mideast Marketing Area.

Background

This staff paper builds on previous work performed by Mideast staff. In March 2008, the Mideast Market Administrator's Office released staff paper 08-01 which included weighted average component levels and milk values for 2007. Results of the analysis indicated that the weighted average butterfat test was 3.66 percent, the weighted average protein test was 3.05 percent, the weighted average other solids test was 5.71 percent and the somatic cell count (SCC) was 273. Additionally, the weighted average milk value for 2007 was \$18.48 per

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¹ Protein tests for 2008 reflect the change from crude protein to true protein testing methods that occurred in January 2000. The difference between crude and true protein levels in milk is non-protein nitrogen (NPN).

² Under MCP, producer milk is priced on the cumulative value of butterfat, protein and other solids pounds with an adjustment for somatic cell count.

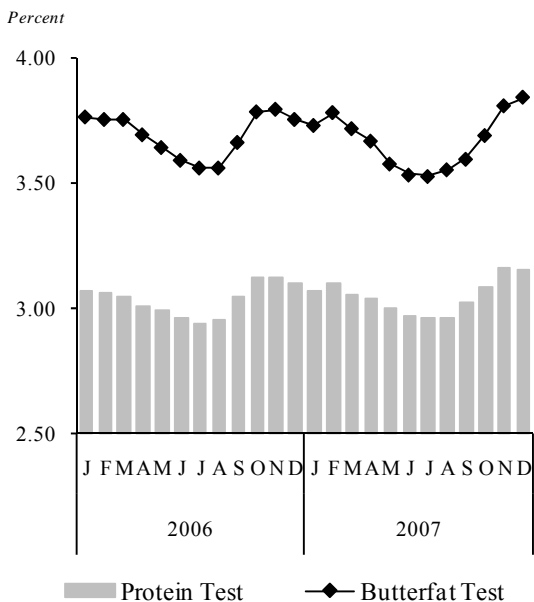


Figure 1. 2006 - 2007 Weighted Average Butterfat and Protein Tests, F.O. 33

cwt. It is important to consider that the 2008 analysis did not incorporate SCC adjustments into the calculation of milk value.³

Previous research also found that component levels were subject to producer size, production region as well as climate conditions. There was a negative correlation between producer size and the butterfat and protein tests and the milk value per cwt. Seasonal conditions which traditionally result in low component tests in the spring and summer months and high component tests in the fall and winter months were observed in the 2008 analysis (refer to Figure One for historical butterfat test and protein test weighted averages for the Midwest Marketing Area). State level variations were also observed in the 2008

³ SCC adjustment rate is equal to 0.0005 times the weighted average protein price, rounded to the 5th decimal place, multiplied by 350 less the SCC count (in thousands) of the milk.

analysis. The regional variations were a function of the local climate, producer size and herd makeup. Regional patterns observed include high butterfat and protein tests in West Virginia and Pennsylvania and low butterfat and protein tests in Michigan and Kentucky.

To tests if seasonal component tests were statistically different, an analysis of variance was performed in the previous analysis using 2007 component data. The computed F-values were not greater than the critical F-value indicating that the calculated monthly means were not significantly different at the 0.05 level. The lack of a significant difference in the component levels suggests that although component variations exist, using month as the independent factor is an inefficient predictor of variance. In addition to month other factors influence component test variations. It is feasible to expect that if the ANOVA test were performed on a homogenous data set significant differences in component tests could be observed using month as the single-independent factor.⁴

OLS regression analysis indicated that for 2007 a positive statistical relationship existed between butterfat tests and protein tests. In the OLS regression analyses for other solids tests protein and butterfat coefficients were statistically significant yet both models had very poor adjusted R-squared, which indicated that butterfat tests or protein tests alone do not have significant explanatory power for determining the other solids test. In addition to the single-independent OLS regression analyses,

⁴ Results of a Wald test on a fixed period effect model introduced in this analysis indicate that discrete variables capturing the month are in fact statistically different than zero.

models were constructed to test the significance of discrete variables measuring season and producer size on the butterfat test. In both models the discrete variables for month and percentile group were statistically significant.

A variation of this study is performed by Dairy Programs staff in the Upper Midwest and Pacific Northwest Orders for producers associated with Federal Order 30, 124 and 131.⁵ The most recent staff papers from the Upper Midwest (2008) and the Pacific Northwest (2009) indicated that component tests varied by production location, season and producer size. For 2007, the producers associated with the Upper Midwest Marketing Area had a weighted average butterfat test of 3.70 percent, a weighted average protein test of 3.03 percent, a weighted average other solids test of 5.71 percent and a weighted average SCC of 288 – which resulted in a weighted average milk component value of \$18.54 per hundred. For 2007, the producers associated with the Pacific Northwest Marketing Area had a weighted average butterfat test of 3.70 percent, a weighted average protein test of 3.09 percent and a weighted average other solids test of 5.71 percent, – which resulted in a weighted average milk component value of \$19.28 per hundred.⁶ For 2007, producers associated with the Arizona Marketing Area had a weighted average butterfat test of 3.59 percent.

OLS regression analyses were also performed by each office. Results of the OLS analyses were in line with the model

outputs for milk associated with the Mideast Marketing Area.

Data and Methodology

The data was collected from producer payrolls submitted by handlers and cooperatives to the Market Administrator's Office. As handlers and cooperatives generally submit their entire payrolls, the data not only includes producer milk pooled on the Mideast Order, but also milk pooled on other Orders and milk associated with the market but not pooled due to price fluctuations and/or price relationships among Federal Orders. It is important to note that in 2008 over 858 million pounds of milk were voluntarily de-pooled due to unusual price relationships. For the purpose of this study, the milk associated with those producers with de-pooled milk was included. Producers who appeared on the payrolls submitted to this office but who did not pool milk on Federal Order 33 were not included in this analysis. Several of the cooperatives pooling on the Mideast Order do not submit their payrolls electronically. Data not submitted electronically was omitted from this analysis. As a result, there is a significant difference in the number of producers and delivery volume in this study and the number of producers and delivery volume as pooled on the Mideast Federal Order during 2008.

The descriptive statistics detailed in this analysis include weighted average, mean, standard deviation and where applicable the minimum and maximum values observed in the data population. Weighted averages are given by the equation:

⁵ Pacific Northwest includes Federal Order 124 and 131.

⁶ The Pacific Northwest weighted average milk component value includes the producer price differential

$$\bar{x} = \frac{p_1x_1 + p_2x_2 + \dots + p_ix_i}{p_1 + p_2 + \dots + p_i}$$

where for producer i

x = the component test or milk value

p = delivery volume

Calculating the weighted average allows producers with a low production volume to contribute a lesser amount to the weighted mean than producers with a high production volume.

Descriptive Statistics for 2008

For 2008 there were a total of 8,775 producers associated with the Mideast Marketing Area included in this analysis. The total milk marketings of those producers included in this study were approximately 17.8 billion pounds of milk.

For 2008 the weighted average butterfat test was 3.70 percent, an increase of 1.12 percent from 2007. The mean butterfat test for 2008 was 3.84 percent. The range of butterfat tests within one standard deviation of the mean was 3.49 to 4.19 percent.⁷

For 2008 the weighted average protein test was 3.06 percent, an increase of 0.21 percent from 2007. The mean protein test for 2008 was 3.10 percent. The range of protein tests within one standard deviation of the mean was 2.90 to 3.30 percent.

For 2008 the weighted average other solids test was 5.70 percent. The mean other solids test for 2008 was 5.65 percent. The range of other solids tests within one

⁷ For a normal distribution, 68 percent of all observations are within one standard deviation of the mean.

Table 1. Descriptive Statistics, Mideast Marketing Area, 2008

Variable	2008	2007	2006
Butterfat Test			
<i>Weighted Average</i>	3.70	3.66	3.69
<i>Mean</i>	3.84	3.79	*
<i>SD</i>	0.35	0.35	*
<i>CV</i>	0.09	0.09	*
<i>Max</i>	7.25	6.96	*
<i>Min</i>	2.28	1.01	*
Protein Test			
<i>Weighted Average</i>	3.06	3.05	3.03
<i>Mean</i>	3.10	3.09	*
<i>SD</i>	0.20	0.20	*
<i>CV</i>	0.07	0.06	*
<i>Max</i>	7.00	4.86	*
<i>Min</i>	1.82	1.20	*
Other Solids Test			
<i>Weighted Average</i>	5.70	5.71	5.71
<i>Mean</i>	5.65	5.66	*
<i>SD</i>	0.11	0.12	*
<i>CV</i>	0.02	0.02	*
<i>Max</i>	6.44	6.67	*
<i>Min</i>	3.01	2.22	*
Somatic Cell Count (000)			
<i>Weighted Average</i>	259	273	274
<i>Mean</i>	316	320	*
<i>SD</i>	166	163	*
<i>CV</i>	0.53	0.51	*
<i>Max</i>	5,300	2,728	*
<i>Min</i>	3	23	*
Milk Value (\$/per cwt.)			
<i>Weighted Average</i>	18.09	18.48	12.17
<i>Mean</i>	18.40	18.89	*
<i>SD</i>	1.68	2.72	*
<i>CV</i>	0.09	0.14	*
<i>Max</i>	33.98	34.24	*
<i>Min</i>	11.46	5.89	*

* Information unavailable.

standard deviation of the mean was 5.54 to 5.76 percent.

For 2008 the weighted average SCC was 259, a decrease of 5.03 percent from 2007. The mean SCC for 2008 was 316. The range of SCC within one standard deviation of the mean was 150 to 482.

For 2008 the aggregate milk component value for producers included in this analysis was 3.2 billion dollars; per cwt the weighted average milk component value was \$18.09,

a decrease of 2.13 percent from 2007.⁸⁹ The mean milk component value for 2008 was \$18.40 per cwt. The range of milk component values within one standard deviation of the mean was \$16.72 to \$20.08 per cwt. When considering the milk component value ranges it is important to note that for 2008 Class III milk prices ranged from a high of \$19.32 per cwt in January to a low of \$15.28 in December.

Included in table one are coefficient of variation statistics (CV). The coefficient of variation is a measure of the statistical variability, as the CV approaches zero the data distribution tightens around the mean. In this case the CV statistics indicate that the distributions for butterfat, protein, other solids and milk component value are tightly distributed around the mean; while the SCC CV reveals a high variability around the mean, compared to that of the other components. This variability is confirmed when comparing the maximum and minimum SCC values, which range from 3 to 5,300. It is important to consider that when a producer’s SCC is greater than 750 for three out of five months the pasteurized milk ordinance requires that the producer be degraded to Grade B.

Component Tests by Month¹⁰

Dairy cows, when exposed to high temperature coupled with high humidity or

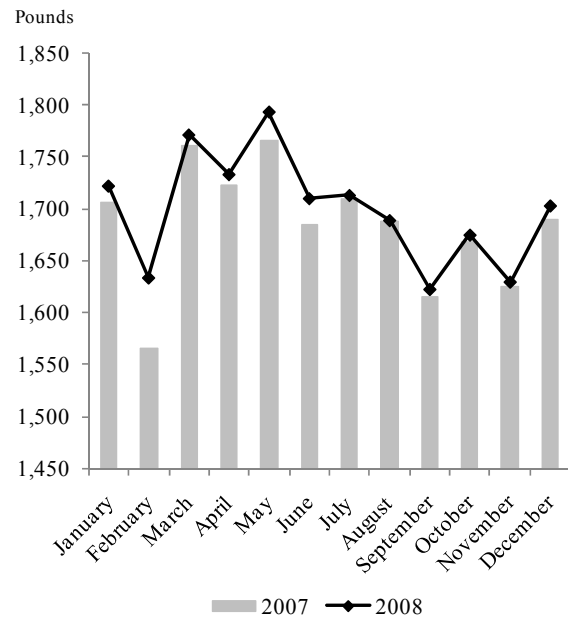


Figure 2. Milk Production per Cow, United States

Source: NASS, Agricultural Statistics Board, U.S. Department of Agriculture.

radiant energy (sunlight) often respond with reduced milk yield and lower butterfat and protein tests, West (2002). Milk cow and production information from the National Agricultural Statistics Board (NASS) shows that milk production per cow increases during the winter months and peaks in the spring before falling off in the summer months (refer to Figure 2). During the spring flush period feeding practices go from a diet consisting of stored feed to a fresh grass diet - this shift in diet results in an increase in milk output per cow but not necessary an increase in component output – effectively lowering the component percentages per hundred of milk.

Appropriately, beginning in February, butterfat and protein tests decreased steadily each month before finally bottoming out in July at 3.53 percent and 2.94 percent for butterfat and protein, respectively. Following the low tests observed in July,

⁸ The aggregate milk component value includes milk pooled on other orders and milk not pooled due to unusual price relationships.

⁹ It is important to consider that the 2007 weighted average milk value did not include the SCC adjustment.

¹⁰ Refer to Appendix A for component descriptive statistics by month.

Table 2. Weighted Average Component Tests by Month, Mideast Marketing Area

	<i>Butterfat Test</i>	<i>Protein Test</i>	<i>Other Solids Test</i>	<i>Somatic Cell Count</i>	<i>Milk Component Value</i>
	<i>percent</i>	<i>percent</i>	<i>percent</i>	<i>(000)</i>	<i>per cwt.</i>
2008					
January	3.80	3.11	5.70	248	\$20.36
February	3.78	3.10	5.70	256	17.94
March	3.77	3.09	5.69	259	18.88
April	3.70	3.04	5.70	255	17.30
May	3.62	3.02	5.72	249	18.58
June	3.56	2.96	5.72	271	20.29
July	3.53	2.94	5.72	290	18.15
August	3.56	2.97	5.70	287	17.42
September	3.64	3.03	5.69	277	16.72
October	3.76	3.11	5.68	249	18.06
November	3.82	3.15	5.68	242	16.69
December	3.86	3.15	5.69	231	16.44
Weighted Avg.	3.70	3.06	5.70	259	\$18.09

butterfat and protein each reached their respective highs for the year in December at 3.86 percent for butterfat and 3.15 percent for protein. The simple average butterfat tests ranged from a low of 3.62 percent in July to a high of 4.04 percent in December. The simple average protein tests ranged from a low of 2.96 percent in July to a high of 3.21 percent in November and December.

Other solids tests remained steady throughout the year, ranging from a high of 5.72 percent in May through July, to a low of 5.68 percent in October and November. Simple average other solid tests ranged from a high of 5.72 percent from May to July and a low of 5.68 percent in October and November.

The observed variations in SCC were opposite that of butterfat and protein, where higher SCCs were observed in the summer

months and lower SCCs were observed in the fall and winter months. Weighted average SCC ranged from a high of 290 in July to a low of 231 in December. Simple average SCC ranged from a high of 361 in July to a low of 283 in November.

The seasonal variations observed in the component tests of Mideast producer milk were supported by the findings of Freije (2008) and Espe (2009); both researchers concluded that seasonal weather patterns influence component tests in herd level milk for producers in their respective marketing areas.

Weighted average milk component value ranged from a high of \$20.36 per cwt in January to a low of \$16.44 per cwt in December. Simple average milk component value ranged from a high of \$20.76 per cwt

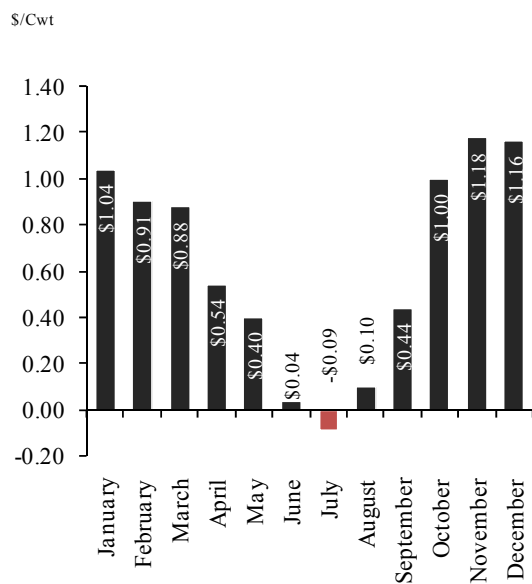


Figure 3. Component Price Differential, 2008

in January to a low of \$16.82 per cwt in November.

In this analysis milk component value by month is calculated by multiplying component prices by the applicable weighted average component percentages; by subtracting the announced Class III price from the weighted average milk component value, the financial impact of component variations can be assessed. Large positive variances are a result of component tests that are greater than the standard component tests used to calculate the Class III price - Class III milk price is calculated using the formula: $2.99(\text{Protein price}) + 5.69(\text{Other solids price}) + 3.5(\text{Butterfat price})$. Figure Two details the component price differential (CPD) for 2008 - defined as the difference in value between the weighted average milk component value for Mideast producers and the announced Class III price.

As seen in figure three, the CPD follows a pattern similar to butterfat and protein tests

where the CPD is highest in the fall and winter months and lowest in the spring and summer months, reaching its lowest in July at $-\$0.09$ per cwt – driven by a below average protein test of 2.94 percent.

Regional Variations in Component Tests¹¹

For this section milk component levels and milk component values were analyzed by the state where the producer farm is located. The geographical region includes Iowa, Illinois, Indiana, Kentucky, Maryland, Michigan, Minnesota, New York, Ohio, Pennsylvania, Tennessee, Virginia, Vermont, Wisconsin, West Virginia North Carolina and Massachusetts. Of those states, Indiana, Kentucky, Michigan, Ohio, Pennsylvania and West Virginia are located or partially located within the Mideast Marketing Area.

Of the states included in this analysis, total 2008 delivery pounds ranged from a low of 368 thousand pounds for Vermont producers, to a high of 7.0 billion pounds for Michigan producers. Milk from Michigan producers accounted for approximately 40 percent of the milk included in this analysis.

During 2008 the total number of producer farms in a given state ranged from a low of 3 in Vermont to a high of 2,461 in Ohio – with the average being 627 producer farms per state. Of the states making up the marketing area, there were 7,254 producer

¹¹ Refer to Appendix A for component descriptive statistics by state. Appendix B contains descriptive statistics by state and county for 2008. Appendix C contains relevant thematic maps depicting weighted average component tests by state and county for 2008.

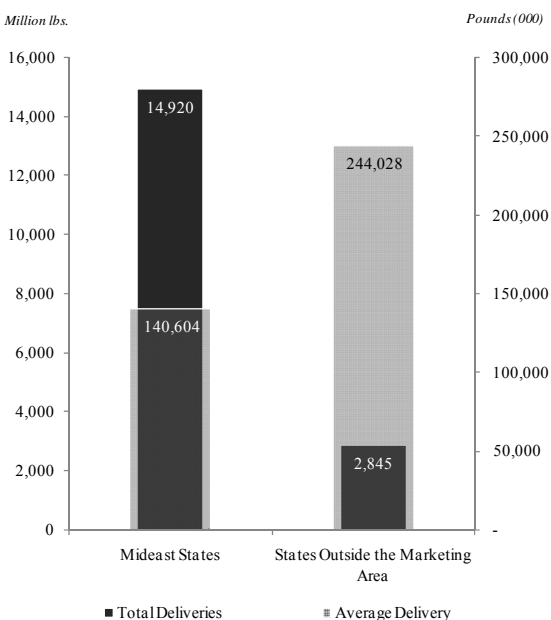


Figure 4. Total Delivery and Average Delivery Comparison , 2008

farms – roughly 83 percent of the farms included in this study.

Of the states included in this analysis Virginia had the highest average delivery volume at 634 thousand pounds, while Maryland had the lowest average delivery volume at 66 thousand pounds. Average delivery statistics can be misleading when comparing deliveries from states outside the marketing area to states within the marketing area. For example, Virginia had the highest average delivery volume but it represented less than one percent of the milk included in the analysis. Alternatively, Pennsylvania had an average delivery volume of approximately 100 thousand pounds (15 percent of Virginia’s delivery volume), but milk from Pennsylvania represented 7.9 percent of the milk included in the analysis. Figure four details the relationship between delivery size and market share for Mideast states and states

outside the marketing area. As demonstrated, Mideast states had an average delivery size of 141 thousand pounds compared to 244 thousand pounds for states outside the marketing area; however, the six states comprising the Mideast marketing area represented approximately 84 percent of the milk included in this analysis. The relationship between load size and total deliveries demonstrates that while single deliveries from states outside the marketing area were significant in volume they contributed very little to state aggregated weighted average calculations.

Weighted average butterfat tests for Mideast states ranged from a low of 3.64 percent in Michigan to a high of 3.94 percent in West Virginia. For states outside the marketing area weighted average butterfat tests ranged from a low of 3.52 percent in Vermont to a high of 3.87 percent in Maryland.

Weighted average protein tests for Mideast states ranged from a low of 3.04 percent in Michigan to a high of 3.21 percent in West Virginia. For states outside the marketing area weighted average protein tests ranged from a low of 3.02 percent in Wisconsin to and high of 3.37 percent in Virginia.

Weighted average other solids tests for Mideast states ranged from a low of 5.62 percent in Kentucky to a high of 5.71 percent in Michigan. For states outside the marketing area weighted average other solids ranged from a low of 5.67 percent in Vermont to a high of 5.84 percent in Virginia.

Weighted average SCC for Mideast states ranged from a low of 232 in Michigan to a

Table 3. Weighted Average Component Tests by State, Mideast Marketing Area, 2008

State	<i>Butterfat Test</i> <i>percent</i>	<i>Protein Test</i> <i>percent</i>	<i>Other Solids Test</i> <i>percent</i>	<i>Somatic Cell Count</i> <i>(000)</i>	<i>Milk Component Value</i> <i>per cwt.</i>
Illinois	3.67	3.02	5.73	276	\$17.94
Indiana	3.73	3.05	5.69	279	18.06
Iowa	3.58	3.03	5.77	267	17.69
Kentucky	3.70	3.06	5.62	379	18.15
Maryland	3.87	3.12	5.69	296	18.56
Michigan	3.64	3.04	5.71	232	17.97
Minnesota	3.72	3.07	5.70	294	18.42
New York	3.69	3.05	5.70	237	17.88
Ohio	3.75	3.08	5.69	274	18.25
Pennsylvania	3.81	3.09	5.67	333	18.27
Vermont	3.52	3.04	5.67	313	18.15
Virginia	3.64	3.37	5.84	153	19.65
West Virginia	3.94	3.21	5.67	361	18.98
Wisconsin	3.73	3.02	5.74	262	18.17
Weighted Avg.	3.70	3.06	5.70	259	\$18.09

high of 379 in Kentucky. For states outside the marketing area weighted average SCC ranged from a low of 153 in Virginia to a high of 313 in Vermont.

Weighted average milk component value for Mideast states ranged from a low of \$17.97 per cwt in Michigan to a high of \$18.98 per cwt in West Virginia. For states outside the marketing area weighted average milk component value ranged from a low of \$17.69 per cwt in Iowa to a high of \$19.65 per cwt in Virginia – a difference of \$1.96 per hundred.

When analyzing the component statistics by state it is important to consider that the statistics represent only milk associated with the Mideast marketing area; as a result it is unreasonable to expect the statistics to be representative of all milk produced in the state (e.g. Illinois). In order to put this into perspective consider that for 2008 there

were approximately 1.9 billion pounds of milk produced in Illinois, of which only 121 million pounds of milk were included in this study.

Component tests at the state level are dependent on the climate conditions for each specific state; however, herd composition and herd size also play important roles in the component levels. The following section will provide component statistics by producer delivery volume.

Component Test Variations by Producer Size¹²

In order to examine the impact producer size has on the component levels of herd milk, producers associated with the Mideast

¹² Refer to Appendix A for component descriptive statistics by producer size.

Table 4. Weighted Average Component Tests by Percentile Group, Mideast Marketing Area, 2008

Percentile Group	<i>Butterfat</i>	<i>Protein Test</i>	<i>Other Solids</i>	<i>Somatic Cell</i>	<i>Milk</i>
	<i>Test</i>		<i>Test</i>	<i>Count</i>	<i>Component</i>
	<i>percent</i>	<i>percent</i>	<i>percent</i>	<i>(000)</i>	<i>per cwt.</i>
One	3.95	3.15	5.60	362	\$18.83
Two	3.94	3.13	5.61	362	18.74
Three	3.90	3.12	5.63	345	18.61
Four	3.87	3.11	5.64	328	18.53
Five	3.86	3.10	5.65	337	18.46
Six	3.83	3.09	5.66	325	18.39
Seven	3.81	3.09	5.67	308	18.35
Eight	3.79	3.08	5.69	296	18.28
Nine	3.77	3.07	5.70	265	18.25
Ten	3.62	3.04	5.72	230	17.90
Weighted Avg.	3.70	3.06	5.70	259	\$18.09

market were divided into ten groups with the same number of producers, based on average monthly delivery volume. In total there were 8,775 producers included in this study, so each percentile group had 877 producers. Percentile group one represents producers with the smallest delivery volume, while percentile group ten represents producers with the highest delivery volume. In order to put percentile groups into perspective consider that percentile group one supplied 0.36 percent of the milk included in this analysis while percentile group ten supplied 58.58 percent of the milk.

Average monthly deliveries by percentile group ranged from approximately 17 thousand pounds for producers in percentile group one (590 pounds per day), to over 870 thousand pounds (29,000 pounds per day) for producers in percentile group ten.¹³

From percentile group one to percentile group nine the incremental increase in delivery volume averages 38 percent; however, from percentile group nine to percentile group ten the percentage change in average monthly deliveries is 284 percent.

Another statistic which demonstrates the stark differences among producer delivery volume are total milk component values. The total milk component value for 2008 ranged from a low of \$11.9 million dollars (\$14 thousand dollars per producer) for producers in percentile group one to \$1.9 billion dollars (\$2.1 million dollars per producer) for producers in percentile group ten. Additionally, the total milk component value for producers in percentile group ten is 325 percent higher than that of producers in percentile group nine.

Component levels of butterfat, protein and SCC are negatively correlated with

¹³ Calculated using 30 days per month.

producer size, while other solids tests are positively correlated with producer size.

Weighted average butterfat tests ranged from a high of 3.95 percent for producers in percentile group one to a low of 3.62 percent for producers in percentile group ten. Additionally, percentile groups one through nine had weighted average butterfat tests greater than the market weighted average of 3.70 percent.

Weighted average protein tests ranged from a high of 3.15 percent for producers in percentile group one to a low of 3.04 percent for producers in percentile group ten. Additionally, percentile groups one through nine had weighted average protein tests greater than the market weighted average of 3.06 percent.

Weighted average other solids tests ranged from a low of 5.60 percent for producers in percentile group one to a high of 5.72 percent for producers in percentile group ten. Additionally, percentile groups one through nine had weighted average other solids tests less than the market weighted average of 5.70 percent.

Weighted average SCC ranged from a high of 362 for producers in percentile group one to a low of 230 for producers in percentile group ten. Additionally, percentile groups one through nine had weighted average SCC greater than the market weighted average of 259.

Weighted average milk component value ranged from a high of \$18.83 per cwt for producers in percentile group one to a low of \$17.90 per cwt for producers in percentile group ten. Additionally, percentile groups one through nine had weighted average milk

component values greater than the market weighted average of \$18.09 per cwt.

The observed variations in component tests by producer size are likely caused by multiple factors at the herd level including but not limited to herd type, feed type and feed allocation. Unfortunately, this analysis does not capture herd type or feeding practices so the statistical significance of each variable on component tests is unknown.

Component Test Variations by Subgroup¹⁴

For this section the data was divided into multiple subgroups. The subgroups analyzed include: state level component tests by month, component tests by percentile group and state, and percentile group component tests by month.

Due to the considerable amount of data output pertaining to this section it is not practical to describe the test variations within each subgroup.

When component tests were analyzed by state and month and by percentile group and month seasonal changes in component levels were observed.¹⁵ When component tests were analyzed by producer size and state the correlation (negative) between producer size and test was not as pronounced (e.g. Kentucky and Maryland) as were seen in test levels by percentile group alone.¹⁶

The statistics presented in this section demonstrate that component levels do vary significantly at the herd level. State

¹⁴ Refer to Appendix A for component descriptive statistics described in this section.

¹⁵ See *Component Tests by Month*.

¹⁶ See *Component Tests Variations by Producer Size*.

variations are a function of different climate conditions as well as management practices in different parts of the marketing area; while variations seen in conjunction with producer size are a function of the different farm management practices (e.g. herd type and feed strategy).

Component Models¹⁷

For this section OLS regression analysis is used to determine the relationship among milk components. The model estimates the linear relationship between milk components and includes random entity and fixed time effects. Including entity and time effects will allow the models to control for omitted variables without actually observing them. For example, each farm is subject to random management practices (feeding strategy) or climate conditions that are unobservable but impact component levels. Controlling for omitted variables will provide more accurate parameter estimates and elasticities (e.g. market level versus herd level).

There are three models that will be estimated. The butterfat model is given by the equation:

$$bf_{it} = \beta_0 + \beta_1 pr_{it} + \beta_2 (pr \times os)_{it} + \beta_3 p_{it} + \varepsilon_{it}$$

The protein model is given by the equation:

$$pr_{it} = \beta_0 + \beta_1 bf_{it} + \beta_2 (bf \times os)_{it} + \beta_3 p_{it} + \varepsilon_{it}$$

The other solids model is given by the equation:

$$os_{it} = \beta_0 + \beta_1 bf_{it} + \beta_2 (bf \times pr)_{it} + \beta_3 p_{it} + \varepsilon_{it}$$

$$(i = 1, \dots, 6,255)$$

$$(t = 1, \dots, 12)$$

where:

bf = butterfat test

pr = protein test

os = other solids test

p = delivery pounds

Although the relationship is not one to one, it is important to note that since lactose (a key component of other solids) maintains osmotic pressure across the mammary membrane in the cow when butterfat and protein levels increase (decrease), lactose must decrease (increase) to maintain the osmotic pressure in the mammary membrane (MacNish, 2008). The perception that protein or butterfat levels can increase without a subsequent effect on other solids levels is flawed. In order to capture this effect all models include an interaction term. By including the interaction term the elasticity of butterfat with respect to protein now includes an other solids effect:

$$E_{bf,pr} = \frac{\partial bf}{\partial pr} \times \frac{pr}{bf} = (\beta_1 + \beta_2 (os)) \times \frac{pr}{bf}$$

Similarly, the elasticity of protein with respect to butterfat includes an other solids effect:

$$E_{pr,bf} = \frac{\partial pr}{\partial bf} \times \frac{bf}{pr} = (\beta_1 + \beta_2 (os)) \times \frac{bf}{pr}$$

Finally, the elasticity of other solids with respect to butterfat includes a protein effect:

¹⁷ Refer to Appendix D for Eviews output related to the models presented in this section.

Table 5. Determinants of Component Test

Variable	1	2	3	4	Dependent Variable		8	9	10		
	bf	bf	bf	bf	pr	pr	pr	os	os		
<i>Intercept</i>	-0.1326 *	0.3267 *	0.0953 *	1.5643 *	1.4056 *	1.5387 *	1.5091 *	2.0271 *	5.7873 *	5.7441 *	
<i>pr</i>	1.6619 *	1.5574 *	1.5818 *	1.1479 *							
<i>pr*os</i>	-0.0668 *	-0.0744 *	-0.0656 *	-0.0724 *							
<i>bf</i>					0.3210 *	0.5035 *	0.2438 *	0.2617 *			
<i>bf*os</i>					0.0212 *	-0.0142 *	0.0301 *	0.0032 *			
<i>bf</i>									-0.0709 *	-0.0190 *	
<i>pr</i>											
<i>bf*pr</i>									0.0106 *	-0.0026 *	
<i>p</i>	-7.1600E-08 *	-8.0600E-08 *	-7.6000E-08 *	-1.0900E-07 *	7.6200E-09 *	1.3400E-09 *	1.9200E-09 *	-2.1700E-08 *	5.9300E-08 *	6.3600E-08 *	
Random Entity Effect	20,016.18 **				18,272.63 **						
Fixed Time Effect	1,075.97 **				1,152.12 **						
Combined Effect	30,917.75 **				26,434.28 **						59,222.75 **
\bar{R}^2	0.579	0.480	0.602	0.581	0.570	0.476	0.595	0.560	0.046	0.161	
<i>F-statistic</i>	34,433.24	23,091.66	8,107.88	7,446.72	33,233.02	22,751.72	7,886.65	6,827.48	1,220.83	1,028.92	
<i>RSS</i>	3618.49	1750.82	3422.25	1366.64	1241.18	628.83	1169.38	515.28	793.36	190.89	

Note: Single (*) asterisk indicates a computed t-value greater than the critical t-value at $\alpha=0.05$, p-values are contained in Appendix D. Double (**) asterisk indicates a computed F-value greater than the critical F-value at $\alpha=0.05$.

$$E_{os, bf} = \frac{\partial os}{\partial bf} \times \frac{bf}{os} = (\beta_1 + \beta_2 (pr)) \times \frac{bf}{os}$$

In order to capture the aforementioned impacts of diet shifts on milk and component output, delivery pounds were included as an independent variable.

In order to ensure multicollinearity was not present in the estimated models variance inflation factors (VIF) were calculated for each β . Results of the VIF calculations indicated that multicollinearity was not a serious concern.

Table five contains the estimated coefficients for the butterfat, protein and other solids models. Models one, five and nine represent the results of OLS using pooled data. For the purpose of testing the significance of the panel results (Wald test), models one, five and nine represent the constrained regressions. Models two and six test the significance of a random entity effect; models three and seven test the

significance of a fixed time effect; and models four, eight and ten test the joint significance of a random entity effect and fixed time effect.

Results of the Wald tests indicate that the joint random entity effect and fixed time effect models are appropriate model specifications (models four, eight and ten). In contrast, the pooled models are incorrect model specifications subject to omitted variable bias.

Model Results

In previous component models, and as demonstrated in model one, much of the variation in butterfat tests was attributed to variations in the protein test (elasticity of 1.037). However, as seen in the joint random entity effect and fixed time effect model (model four), the relationship between butterfat and protein is actually significantly lower than previously

estimated.¹⁸ When including the interaction term the elasticity between butterfat and protein is equal to 0.59. A one percent increase in the protein test results in a 0.59 percent increase in the butterfat test, holding all else constant.

The coefficient for pounds verifies that during the spring flush period the shift in diet results in an increase in milk output per cow but not an increase in component output, as noted by the significantly negative coefficient. The scale of the pounds coefficient is very small, but non zero.

Similar to the butterfat results, and as seen in model five, a significant amount of the variation in protein tests was attributed to variations in the butterfat test (elasticity of 0.546). However, as seen in the random entity effect and fixed time effect model (model eight), the relationship between protein and butterfat is actually significantly lower than previously estimated.¹⁹ When including the interaction term the elasticity between protein and butterfat is equal to 0.347. A one percent change in the butterfat test results in a 0.347 percent change in the protein test, holding all else constant.

Similar to butterfat, the coefficient for pounds in the protein model supports the claim that the shift in diet increases milk output but not component output, as noted by the significantly negative coefficient. The scale of the pounds coefficient is very small, but non zero.

In the pooled model testing other solids as a function of butterfat, protein and delivery pounds the elasticity of other solids relative to butterfat was -0.026; however in the random entity and fixed time effect model the elasticity was lower than estimated in the pooled model. The

elasticity between other solids and butterfat is equal to -0.018, indicating that a one percent increase in the butterfat test results in a -0.018 percent decline in the other solids test, holding all else constant.

The significantly positive coefficient for pounds in the other solids model suggests that as pounds increase the other solids level also increases, holding all else constant. When the butterfat and protein levels decrease during the flush periods (as noted by the significantly negative coefficients) it is appropriate that the other solids level increase (significantly positive coefficient) to maintain the osmotic pressure in the mammary membrane. The scale of the pounds coefficient is very small, but non zero.

Table 6. Computed Elasticities

	Mideast (2008)	Mideast (2007)	Variance
$E_{pr,bf}$	0.3468	0.5064	-0.1596
$E_{bf,pr}$	0.5964	1.0900	-0.4936
$E_{os,bf}$	-0.0183	-0.0205	0.0022

Joint random entity and fixed time effects demonstrated that previous model estimations suffered from omitted variable bias. As a result, previous OLS regression analyses over estimated the elasticities among components at the herd level (refer to Table 6).

The computed elasticities in table six were calculated using the population means for each of the components. Since the component levels vary across the data population, the elasticities will be different depending on the component levels used. For example, using the maximum observed component tests (7.25, 7.00 and 6.44 for

¹⁸ Using pooled data from 2007 without an interaction term, the computed elasticity of butterfat relative to protein was 1.09.

¹⁹ Using pooled data from 2007 and without an interaction term, the computed elasticity of protein relative to butterfat was 0.5064.

butterfat, protein and other solids, respectively) the protein-elasticity of butterfat is 0.66 (0.59 using the mean tests). Since 0.66 is greater than 0.59, the butterfat test is more responsive to changes in the protein test at the maximum observed component test, holding all else constant.

The variances in the calculated elasticities from 2007 to 2008 are given in table six. Previous models measuring the determinants of butterfat test have significantly over estimated the relationship among butterfat, protein and other solids. In previous models the elasticity for butterfat related to protein was greater than one. When measured in a random effect and fixed time effect model the elasticity was considerably less than one.

Conclusion

Results of this study determined the weighted average component tests for butterfat, protein, other solids and SCC for 2008. In addition, the weighted average milk value at the herd level was also calculated for 2008. Component tests and milk values were also analyzed by season, region, producer size and subgroup. Finally, the statistical relationships among components in herd level milk were estimated for the Mideast Marketing Area.

For 2008 the weighted average butterfat test was 3.70 percent, up 0.03 percentage points from 2007. The weighted average protein test was 3.06 percent, up 0.01 percentage points from the previous year. The weighted average other solids test was in line with the previous year at 5.70 percent. Weighted average SCC levels were 259 for 2008, compared to 273 for 2007. Weighted average milk value was \$18.09 per cwt for 2008, a 2.1 percent decrease from 2007.

Component levels vary significantly at the herd level. Results of the OLS

regression analysis indicated that portions of the variations in component levels are due to random effects at the herd level such as resource allocation and regional climate conditions. In addition to effects at the herd level, seasonal effects also contributed to the variation in component tests during the year. When both effects were included in the OLS estimations the elasticities among the components were found to be notably different than previously estimated. The elasticity changes are a result of omitted variable bias, where previous model estimations did not capture the effect of seasonal or herd level variations resulting in bias model coefficients.

Future Studies

This component level analysis should be updated by Federal Order 33 staff on an annual basis.

For questions or more information concerning this analysis, please direct questions to: John Newton, Marketing Specialist, Federal Order 33.

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APPENDIX A

COMPONENT TEST STATISTICS FOR PRODUCER MILK ASSOCIATED WITH THE MIDEAST MARKETING AREA 1/ 2008

	Butterfat Test			Protein Test			Other Solids Test			Somatic Cell Count			Milk Component Value			Delivery Pounds
	Weighted Average	Simple Average	Standard Deviation	Weighted Average	Simple Average	Standard Deviation	Weighted Average	Simple Average	Standard Deviation	Weighted Average	Simple Average	Standard Deviation	Weighted Average	Simple Average	Standard Deviation	
Mideast Market 2008	3.70	3.84	0.35	3.06	3.10	0.20	5.70	5.65	0.11	259	316	166	18.09	18.40	1.68	17,766,796,777
Month	<i>percent</i>			<i>percent</i>			<i>percent</i>			<i>(000)</i>			<i>(\$ per cwt.)</i>			
January	3.80	3.96	0.35	3.11	3.16	0.20	5.70	5.66	0.11	248	295	160	20.36	20.76	1.29	1,540,709,274
February	3.78	3.94	0.34	3.10	3.15	0.20	5.70	5.66	0.11	256	311	173	17.94	18.28	1.15	1,462,317,560
March	3.77	3.93	0.33	3.09	3.13	0.19	5.69	5.65	0.11	259	320	181	18.88	19.22	1.18	1,533,720,132
April	3.70	3.85	0.31	3.04	3.07	0.18	5.70	5.66	0.10	255	313	165	17.30	17.58	1.01	1,549,531,347
May	3.62	3.74	0.30	3.02	3.07	0.17	5.72	5.69	0.10	249	300	150	18.58	18.91	1.06	1,564,974,357
June	3.56	3.66	0.28	2.96	2.99	0.16	5.72	5.68	0.10	271	329	162	20.29	20.53	1.12	1,450,691,157
July	3.53	3.62	0.27	2.94	2.96	0.16	5.72	5.66	0.11	290	361	176	18.15	18.29	0.99	1,463,570,478
August	3.56	3.64	0.27	2.97	3.00	0.16	5.70	5.64	0.11	287	355	172	17.42	17.56	0.97	1,461,564,022
September	3.64	3.75	0.29	3.03	3.07	0.17	5.69	5.63	0.11	277	336	160	16.72	17.00	1.00	1,392,706,107
October	3.76	3.90	0.33	3.11	3.18	0.20	5.68	5.62	0.12	249	299	144	18.06	18.53	1.22	1,433,801,915
November	3.82	4.00	0.36	3.15	3.21	0.22	5.68	5.63	0.13	242	283	164	16.69	17.15	1.23	1,395,490,861
December	3.86	4.04	0.38	3.15	3.21	0.22	5.69	5.64	0.11	231	288	159	16.44	16.82	1.22	1,517,719,567
State																
Illinois	3.67	3.76	0.26	3.02	3.07	0.17	5.73	5.69	0.09	276	325	142	17.94	18.33	1.45	121,607,735
Indiana	3.73	3.84	0.35	3.05	3.09	0.20	5.69	5.65	0.10	279	313	159	18.06	18.34	1.64	2,021,643,335
Iowa	3.58	3.73	0.21	3.03	3.09	0.13	5.77	5.74	0.07	267	324	130	17.69	18.94	1.45	29,008,617
Kentucky	3.70	3.80	0.45	3.06	3.14	0.27	5.62	5.59	0.12	379	405	148	18.15	18.35	1.91	20,258,483
Maryland	3.87	3.91	0.36	3.12	3.13	0.19	5.69	5.67	0.08	296	341	188	18.56	18.64	1.69	35,669,982
Michigan	3.64	3.78	0.31	3.04	3.09	0.19	5.71	5.67	0.11	232	294	164	17.97	18.28	1.60	6,995,580,640
Minnesota	3.72	3.88	0.37	3.07	3.12	0.15	5.70	5.67	0.09	294	336	168	18.42	18.18	1.33	15,637,168
New York	3.69	3.80	0.30	3.05	3.07	0.18	5.70	5.66	0.12	237	289	160	17.88	18.18	1.59	1,481,084,939
Ohio	3.75	3.88	0.40	3.08	3.13	0.23	5.69	5.65	0.10	274	316	159	18.25	18.58	1.79	4,410,731,346
Pennsylvania	3.81	3.87	0.34	3.09	3.11	0.20	5.67	5.63	0.12	333	362	179	18.27	18.39	1.67	1,405,705,135
Vermont	3.52	3.63	0.29	3.04	3.04	0.07	5.67	5.64	0.09	313	320	25	18.15	17.88	1.43	368,625
Virginia	3.64	3.69	0.19	3.37	3.26	0.25	5.84	5.75	0.16	153	153	55	19.65	18.99	1.90	15,212,005
West Virginia	3.94	3.98	0.41	3.21	3.22	0.22	5.67	5.59	0.16	361	367	180	18.98	19.01	1.83	65,640,387
Wisconsin	3.73	3.81	0.26	3.02	3.04	0.16	5.74	5.68	0.12	262	308	168	18.17	18.28	1.53	1,146,530,458
Percentile Group																
One	3.95	4.00	0.45	3.15	3.18	0.28	5.60	5.55	0.20	362	389	247	18.83	18.85	2.01	63,115,388
Two	3.94	3.97	0.44	3.13	3.15	0.27	5.61	5.58	0.15	362	376	205	18.74	18.75	1.96	199,222,862
Three	3.90	3.93	0.39	3.12	3.13	0.24	5.63	5.61	0.11	345	352	185	18.61	18.64	1.84	324,390,737
Four	3.87	3.89	0.36	3.11	3.12	0.22	5.64	5.63	0.12	328	334	168	18.53	18.55	1.73	447,239,736
Five	3.86	3.87	0.35	3.10	3.11	0.20	5.65	5.64	0.10	337	343	165	18.46	18.46	1.69	594,663,173
Six	3.83	3.84	0.31	3.09	3.10	0.18	5.66	5.65	0.09	325	329	159	18.39	18.38	1.57	780,301,198
Seven	3.81	3.82	0.30	3.09	3.09	0.18	5.67	5.67	0.09	308	311	147	18.35	18.34	1.56	1,055,820,145
Eight	3.79	3.79	0.30	3.08	3.09	0.17	5.69	5.68	0.08	296	300	135	18.28	18.28	1.53	1,494,310,220
Nine	3.77	3.78	0.30	3.07	3.08	0.17	5.70	5.69	0.08	265	269	122	18.25	18.27	1.54	2,399,734,579
Ten	3.62	3.67	0.26	3.04	3.04	0.15	5.72	5.71	0.09	230	239	122	17.90	17.98	1.47	10,407,998,739

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COMPONENT TEST STATISTICS FOR PRODUCER MILK ASSOCIATED WITH THE MIDEAST MARKETING AREA 1/ 2008

State / Month		Butterfat Test			Protein Test			Other Solids Test			Somatic Cell Count			Milk Component Value			Delivery Pounds
		Weighted Average	Simple Average	Standard Deviation	Weighted Average	Simple Average	Standard Deviation	Weighted Average	Simple Average	Standard Deviation	Weighted Average	Simple Average	Standard Deviation	Weighted Average	Simple Average	Standard Deviation	
		percent			percent			percent			(000)			(\$ per cwt.)			
Illinois	January	3.80	3.89	0.24	3.05	3.10	0.17	5.71	5.67	0.09	242	279	126	20.10	20.39	1.00	13,120,576
	February	3.74	3.84	0.24	3.05	3.10	0.15	5.72	5.68	0.09	269	337	169	17.66	17.91	0.85	12,403,358
	March	3.68	3.79	0.23	3.04	3.08	0.13	5.71	5.68	0.09	283	355	176	18.54	18.78	0.78	13,231,697
	April	3.68	3.77	0.23	3.00	3.03	0.12	5.73	5.69	0.09	268	318	145	17.15	17.34	0.72	12,996,441
	May	3.59	3.65	0.21	2.99	3.04	0.12	5.74	5.70	0.08	267	303	130	18.39	18.65	0.72	12,279,845
	June	3.56	3.59	0.21	2.96	2.98	0.12	5.73	5.70	0.09	329	339	125	20.24	20.34	0.82	7,296,330
	July	3.52	3.54	0.18	2.92	2.94	0.11	5.73	5.69	0.10	341	363	124	18.01	18.09	0.66	9,537,332
	August	3.53	3.58	0.14	2.93	2.98	0.12	5.74	5.67	0.13	289	360	143	17.21	17.40	0.63	8,127,149
	September	3.61	3.69	0.16	2.98	3.05	0.14	5.75	5.68	0.11	285	344	134	16.51	16.83	0.68	7,754,495
	October	3.70	3.83	0.22	3.06	3.16	0.17	5.76	5.69	0.10	252	300	114	17.78	18.33	0.97	8,019,553
	November	3.76	3.89	0.23	3.10	3.20	0.18	5.75	5.69	0.10	243	287	121	16.41	16.91	0.91	7,957,307
	December	3.83	4.01	0.35	3.13	3.24	0.23	5.74	5.69	0.10	264	312	136	16.29	16.90	1.26	8,883,652
Indiana	January	3.85	4.00	0.36	3.12	3.17	0.20	5.69	5.65	0.10	279	292	150	20.44	20.83	1.31	163,751,354
	February	3.81	3.97	0.34	3.10	3.14	0.19	5.69	5.66	0.09	273	309	168	17.93	18.28	1.15	168,715,940
	March	3.79	3.94	0.33	3.08	3.12	0.19	5.68	5.65	0.10	283	326	177	18.84	19.16	1.17	175,698,020
	April	3.73	3.85	0.29	3.03	3.05	0.17	5.68	5.65	0.10	276	313	161	17.29	17.52	0.96	178,925,947
	May	3.63	3.71	0.28	3.00	3.05	0.16	5.72	5.68	0.09	266	300	149	18.51	18.79	0.99	185,069,174
	June	3.58	3.63	0.26	2.94	2.97	0.15	5.71	5.67	0.09	296	333	164	20.20	20.37	1.06	164,033,523
	July	3.55	3.60	0.25	2.93	2.94	0.15	5.70	5.65	0.09	320	362	174	18.10	18.20	0.95	166,402,651
	August	3.58	3.62	0.25	2.96	2.98	0.15	5.68	5.63	0.10	314	352	167	17.37	17.46	0.92	160,419,987
	September	3.66	3.75	0.28	3.02	3.05	0.16	5.68	5.62	0.10	295	332	149	16.70	16.95	0.97	156,581,631
	October	3.79	3.89	0.32	3.10	3.18	0.19	5.67	5.62	0.10	262	288	130	18.08	18.50	1.19	168,096,079
	November	3.86	4.01	0.35	3.15	3.21	0.21	5.68	5.63	0.10	240	271	134	16.73	17.18	1.19	162,414,013
	December	3.92	4.08	0.37	3.15	3.21	0.22	5.68	5.64	0.09	244	281	152	16.49	16.89	1.20	171,535,016
Iowa	January	3.82	3.88	0.20	3.16	3.19	0.17	5.69	5.70	0.09	238	248	113	20.59	20.82	0.89	2,596,733
	February	3.79	3.84	0.15	3.13	3.15	0.13	5.71	5.72	0.08	304	343	169	18.00	18.13	0.58	2,421,700
	March	3.75	3.79	0.14	3.10	3.11	0.10	5.71	5.72	0.06	345	384	170	18.82	18.90	0.42	2,539,163
	April	3.73	3.77	0.12	3.05	3.07	0.09	5.73	5.75	0.05	310	350	122	17.34	17.46	0.39	2,436,571
	May	3.55	3.58	0.21	3.01	3.05	0.11	5.75	5.76	0.05	305	323	79	18.39	18.59	0.53	2,582,131
	June	3.53	3.57	0.19	2.97	3.00	0.08	5.76	5.76	0.05	341	349	79	20.20	20.40	0.49	2,344,541
Kentucky	January	3.91	4.04	0.41	3.13	3.19	0.27	5.58	5.54	0.15	380	399	136	20.42	20.84	1.67	1,070,698
	February	3.88	4.10	0.62	3.11	3.26	0.40	5.60	5.56	0.12	391	426	160	17.95	18.83	2.29	1,044,868
	March	3.83	3.92	0.40	3.10	3.16	0.24	5.59	5.58	0.13	420	464	122	18.84	19.20	1.46	1,189,569
	April	3.78	3.83	0.36	3.06	3.11	0.22	5.61	5.61	0.10	393	399	113	17.40	17.65	1.29	1,343,410
	May	3.70	3.73	0.36	3.04	3.10	0.25	5.65	5.65	0.08	377	389	98	18.64	18.95	1.46	1,372,680
	June	3.50	3.54	0.29	2.96	2.99	0.18	5.67	5.63	0.11	350	434	154	20.07	20.23	1.15	3,302,674
	July	3.53	3.58	0.29	2.95	2.98	0.19	5.61	5.60	0.09	412	432	141	18.05	18.25	1.19	1,682,562
	August	3.64	3.62	0.32	3.00	3.02	0.20	5.62	5.59	0.09	413	442	183	17.54	17.52	1.15	2,087,949
	September	3.49	3.53	0.32	3.02	3.05	0.19	5.58	5.56	0.17	383	404	177	16.32	16.49	1.08	2,779,546
	October	3.85	3.92	0.39	3.23	3.31	0.26	5.58	5.57	0.11	371	393	140	18.52	18.93	1.55	1,783,566
	November	3.95	4.10	0.51	3.22	3.31	0.31	5.60	5.59	0.10	314	312	111	17.07	17.60	1.77	1,357,943

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COMPONENT TEST STATISTICS FOR PRODUCER MILK ASSOCIATED WITH THE MIDEAST MARKETING AREA 1/ 2008

		Butterfat Test			Protein Test			Other Solids Test			Somatic Cell Count			Milk Component Value			Delivery Pounds
		Weighted Average	Simple Average	Standard Deviation	Weighted Average	Simple Average	Standard Deviation	Weighted Average	Simple Average	Standard Deviation	Weighted Average	Simple Average	Standard Deviation	Weighted Average	Simple Average	Standard Deviation	
<i>State / Month (continued)</i>		<i>percent</i>			<i>percent</i>			<i>percent</i>			<i>(000)</i>			<i>(\$ per cwt.)</i>			
Kentucky	December	4.03	4.15	0.53	3.20	3.28	0.30	5.66	5.65	0.13	364	363	115	16.71	17.18	1.69	1,243,018
Maryland	January	3.93	4.03	0.43	3.16	3.18	0.22	5.69	5.67	0.09	289	340	194	20.72	20.88	1.43	3,181,455
	February	3.99	4.01	0.38	3.17	3.18	0.22	5.70	5.67	0.10	262	350	192	18.46	18.45	1.29	3,873,439
	March	3.94	4.01	0.36	3.16	3.19	0.22	5.67	5.65	0.10	298	373	235	19.37	19.53	1.32	3,091,334
	April	3.89	3.95	0.29	3.11	3.12	0.17	5.69	5.68	0.07	306	356	196	17.84	17.90	0.89	3,103,025
	May	3.80	3.83	0.30	3.09	3.10	0.16	5.73	5.72	0.06	284	321	176	19.12	19.18	0.87	3,048,385
	June	3.69	3.73	0.30	3.02	3.04	0.14	5.71	5.70	0.07	314	356	179	20.74	20.84	0.92	2,795,497
	July	3.66	3.71	0.32	3.01	3.03	0.15	5.69	5.68	0.07	331	374	205	18.62	18.73	0.97	2,969,282
	August	3.69	3.73	0.34	3.06	3.07	0.15	5.68	5.67	0.07	330	358	168	17.90	18.00	1.03	2,908,620
	September	3.74	3.76	0.21	3.07	3.08	0.12	5.67	5.66	0.07	321	356	194	16.98	17.02	0.68	2,257,897
	October	3.91	3.97	0.36	3.18	3.19	0.17	5.67	5.65	0.08	280	291	135	18.56	18.70	1.16	2,824,331
	November	4.05	4.09	0.33	3.18	3.19	0.19	5.66	5.65	0.09	273	301	185	17.16	17.24	1.12	2,727,725
	December	4.06	4.07	0.33	3.16	3.17	0.19	5.66	5.65	0.09	284	316	173	16.70	16.70	1.06	2,888,992
Michigan	January	3.72	3.90	0.32	3.10	3.15	0.18	5.71	5.68	0.11	220	264	147	20.24	20.64	1.12	590,852,313
	February	3.72	3.88	0.30	3.10	3.14	0.17	5.70	5.66	0.11	231	289	170	17.84	18.18	0.97	545,857,174
	March	3.70	3.88	0.30	3.08	3.13	0.17	5.69	5.65	0.11	233	297	173	18.80	19.16	1.03	584,376,463
	April	3.63	3.80	0.28	3.03	3.06	0.16	5.70	5.68	0.10	225	292	159	17.22	17.52	0.91	585,742,693
	May	3.57	3.70	0.27	3.00	3.05	0.16	5.73	5.70	0.09	225	281	145	18.46	18.78	0.95	616,458,692
	June	3.52	3.62	0.25	2.95	2.99	0.15	5.73	5.70	0.09	244	307	156	20.18	20.46	1.01	592,712,251
	July	3.49	3.58	0.24	2.92	2.94	0.15	5.73	5.69	0.10	257	334	169	18.03	18.18	0.88	600,468,167
	August	3.52	3.59	0.23	2.95	2.97	0.15	5.71	5.66	0.11	254	331	166	17.30	17.42	0.86	585,700,537
	September	3.59	3.71	0.26	3.00	3.05	0.15	5.70	5.65	0.11	239	310	150	16.58	16.88	0.89	560,156,710
	October	3.69	3.84	0.30	3.09	3.16	0.18	5.70	5.64	0.11	222	284	139	17.89	18.35	1.07	583,331,178
	November	3.75	3.93	0.32	3.15	3.20	0.20	5.67	5.64	0.18	236	271	207	16.54	16.98	1.08	563,836,987
	December	3.79	3.96	0.34	3.14	3.20	0.19	5.70	5.65	0.12	203	267	156	16.33	16.71	1.05	586,087,475
Minnesota	January	3.73	3.76	0.29	3.09	3.09	0.12	5.70	5.69	0.08	253	306	154	20.15	20.15	0.79	4,002,870
	February	3.72	3.78	0.28	3.08	3.10	0.12	5.72	5.71	0.08	300	365	209	17.72	17.83	0.68	3,591,143
	March	3.70	3.76	0.32	3.05	3.09	0.13	5.70	5.68	0.09	307	389	218	18.59	18.76	0.79	3,871,135
	April	3.63	3.70	0.39	3.05	3.07	0.14	5.69	5.69	0.09	328	383	166	17.18	17.31	0.91	3,431,222
	November	4.07	4.13	0.30	3.23	3.21	0.19	5.63	5.61	0.08	254	280	96	17.35	17.37	1.04	195,223
	December	4.20	4.30	0.30	3.24	3.26	0.13	5.70	5.64	0.10	261	287	104	17.17	17.35	0.76	436,889
New York	January	3.74	3.87	0.28	3.07	3.10	0.16	5.73	5.67	0.13	226	270	150	20.11	20.40	1.01	109,520,140
	February	3.71	3.87	0.27	3.08	3.12	0.26	5.73	5.67	0.12	226	265	148	17.78	18.10	1.25	103,395,605
	March	3.71	3.89	0.29	3.07	3.09	0.16	5.73	5.66	0.11	221	269	150	18.76	19.06	0.98	109,186,001
	April	3.68	3.82	0.29	3.02	3.03	0.16	5.70	5.66	0.10	223	279	166	17.25	17.43	0.93	106,350,196
	May	3.62	3.74	0.28	3.01	3.05	0.15	5.73	5.69	0.09	220	275	158	18.58	18.87	0.94	112,425,344
	June	3.57	3.64	0.27	2.97	3.00	0.15	5.70	5.66	0.17	230	279	152	20.39	20.59	1.05	106,883,108
	July	3.55	3.60	0.24	2.95	2.94	0.13	5.73	5.67	0.12	256	307	167	18.27	18.25	0.84	108,750,421
	August	3.58	3.63	0.25	2.99	2.99	0.13	5.70	5.65	0.11	268	332	180	17.52	17.56	0.84	143,876,282
	September	3.67	3.72	0.26	3.03	3.05	0.14	5.69	5.64	0.11	268	330	175	16.78	16.91	0.87	135,935,010

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COMPONENT TEST STATISTICS FOR PRODUCER MILK ASSOCIATED WITH THE MIDEAST MARKETING AREA 1/ 2008

		Butterfat Test			Protein Test			Other Solids Test			Somatic Cell Count			Milk Component Value			Delivery Pounds
		Weighted Average	Simple Average	Standard Deviation	Weighted Average	Simple Average	Standard Deviation	Weighted Average	Simple Average	Standard Deviation	Weighted Average	Simple Average	Standard Deviation	Weighted Average	Simple Average	Standard Deviation	
<i>State / Month (continued)</i>		<i>percent</i>			<i>percent</i>			<i>percent</i>			<i>(000)</i>			<i>(\$ per cwt.)</i>			
New York	October	3.75	3.88	0.28	3.09	3.15	0.16	5.69	5.63	0.10	252	291	143	17.98	18.39	1.01	140,549,625
	November	3.78	3.94	0.31	3.12	3.16	0.18	5.68	5.63	0.10	225	278	146	16.51	16.89	1.04	135,575,142
	December	3.80	3.93	0.30	3.12	3.15	0.17	5.68	5.63	0.10	216	278	166	16.25	16.47	0.95	168,638,065
Ohio	January	3.86	4.03	0.40	3.14	3.20	0.23	5.69	5.65	0.11	267	303	166	20.54	21.00	1.49	381,323,780
	February	3.84	4.01	0.39	3.13	3.18	0.22	5.69	5.66	0.10	270	310	171	18.10	18.50	1.32	354,871,278
	March	3.83	4.00	0.38	3.11	3.16	0.22	5.68	5.64	0.10	274	323	184	19.06	19.45	1.36	380,682,991
	April	3.74	3.87	0.34	3.05	3.10	0.19	5.69	5.66	0.10	271	314	160	17.42	17.73	1.15	391,380,788
	May	3.66	3.76	0.34	3.04	3.10	0.19	5.72	5.69	0.09	262	298	144	18.72	19.07	1.21	401,319,103
	June	3.58	3.68	0.31	2.98	3.01	0.18	5.71	5.67	0.09	289	332	157	20.37	20.62	1.25	365,299,626
	July	3.56	3.65	0.30	2.96	2.98	0.17	5.71	5.66	0.10	309	365	171	18.28	18.43	1.11	372,032,528
	August	3.59	3.67	0.30	3.00	3.02	0.18	5.69	5.64	0.10	305	355	160	17.55	17.71	1.10	364,409,665
	September	3.68	3.79	0.33	3.05	3.09	0.19	5.67	5.62	0.11	294	337	149	16.86	17.16	1.13	339,347,357
	October	3.82	3.95	0.37	3.14	3.21	0.22	5.67	5.61	0.11	261	294	131	18.27	18.75	1.38	346,822,853
	November	3.90	4.07	0.41	3.18	3.25	0.24	5.67	5.62	0.10	241	274	134	16.92	17.40	1.42	342,518,813
	December	3.95	4.11	0.44	3.19	3.25	0.25	5.67	5.63	0.11	248	281	146	16.67	17.06	1.41	370,722,564
Pennsylvania	January	3.90	3.97	0.34	3.14	3.17	0.19	5.68	5.64	0.12	311	346	173	20.57	20.72	1.24	114,308,611
	February	3.87	3.97	0.33	3.12	3.15	0.19	5.68	5.64	0.12	314	355	181	18.07	18.28	1.13	120,886,626
	March	3.89	3.97	0.33	3.12	3.14	0.19	5.66	5.63	0.12	324	359	189	19.13	19.26	1.18	114,231,378
	April	3.80	3.89	0.32	3.06	3.07	0.18	5.68	5.64	0.11	323	353	178	17.49	17.63	1.04	126,539,096
	May	3.74	3.80	0.32	3.06	3.08	0.17	5.70	5.67	0.11	318	339	158	18.85	19.03	1.07	122,080,371
	June	3.66	3.70	0.29	2.99	3.01	0.16	5.69	5.66	0.11	342	370	173	20.51	20.62	1.14	114,526,736
	July	3.63	3.66	0.28	2.96	2.96	0.16	5.68	5.64	0.12	379	414	193	18.32	18.33	1.02	111,782,383
	August	3.65	3.67	0.28	3.01	3.01	0.16	5.66	5.63	0.13	370	404	191	17.63	17.63	0.98	117,398,753
	September	3.75	3.77	0.29	3.07	3.08	0.16	5.64	5.61	0.13	384	385	179	16.96	17.03	0.98	117,356,039
	October	3.88	3.93	0.32	3.16	3.19	0.19	5.64	5.60	0.14	323	350	169	18.40	18.55	1.17	109,988,789
	November	3.95	4.02	0.33	3.19	3.21	0.20	5.65	5.61	0.12	302	332	164	16.96	17.12	1.13	106,155,536
	December	3.96	4.03	0.34	3.18	3.19	0.20	5.65	5.62	0.12	305	339	175	16.62	16.71	1.12	130,450,817
Virginia	January	3.77	3.65	0.16	3.63	3.49	0.28	6.04	5.88	0.28	188	219	44	22.76	21.93	1.53	3,881,794
	February	3.54	3.56	0.13	3.56	3.56	0.01	5.95	5.95	0.02	154	150	36	19.57	19.60	0.23	4,332,591
	March	3.63	3.65	0.07	3.11	3.13	0.04	5.62	5.61	0.03	161	155	33	18.87	19.00	0.24	4,627,453
	December	3.62	3.69	0.09	3.09	3.08	0.03	5.76	5.75	0.01	68	74	14	16.04	16.11	0.16	2,211,988
West Virginia	January	4.16	4.20	0.38	3.30	3.30	0.22	5.68	5.58	0.21	328	351	167	21.59	21.62	1.43	5,659,838
	February	4.14	4.17	0.34	3.26	3.27	0.21	5.69	5.60	0.19	337	390	210	18.94	18.99	1.21	5,264,318
	March	4.08	4.11	0.34	3.22	3.22	0.20	5.68	5.59	0.20	362	406	213	19.79	19.77	1.25	5,730,412
	April	3.93	3.94	0.31	3.18	3.17	0.19	5.69	5.63	0.16	349	376	165	18.11	18.06	1.11	5,905,428
	May	3.84	3.85	0.34	3.18	3.20	0.18	5.72	5.66	0.14	342	331	145	19.50	19.60	1.21	6,288,146
	June	3.73	3.78	0.33	3.10	3.11	0.18	5.69	5.64	0.11	373	360	158	21.09	21.25	1.34	5,667,074
	July	3.68	3.71	0.32	3.07	3.06	0.18	5.68	5.62	0.12	419	399	197	18.80	18.84	1.19	5,618,019
	August	3.72	3.74	0.35	3.12	3.11	0.20	5.66	5.59	0.13	417	387	162	18.08	18.11	1.25	5,392,617
	September	3.85	3.85	0.36	3.17	3.18	0.20	5.62	5.54	0.14	384	381	186	17.47	17.50	1.24	4,253,940

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COMPONENT TEST STATISTICS FOR PRODUCER MILK ASSOCIATED WITH THE MIDEAST MARKETING AREA 1/ 2008

		Butterfat Test			Protein Test			Other Solids Test			Somatic Cell Count			Milk Component Value			Delivery Pounds
		Weighted Average	Simple Average	Standard Deviation	Weighted Average	Simple Average	Standard Deviation	Weighted Average	Simple Average	Standard Deviation	Weighted Average	Simple Average	Standard Deviation	Weighted Average	Simple Average	Standard Deviation	
		<i>percent</i>			<i>percent</i>			<i>percent</i>			<i>(000)</i>			<i>(\$ per cwt.)</i>			
State / Month (continued)																	
West Virginia	October	3.95	4.01	0.42	3.28	3.30	0.22	5.63	5.55	0.16	356	335	154	18.93	19.14	1.45	5,158,933
	November	4.08	4.18	0.45	3.32	3.34	0.24	5.65	5.56	0.17	330	329	189	17.60	17.83	1.42	5,243,087
	December	4.18	4.26	0.44	3.30	3.32	0.25	5.66	5.59	0.15	347	356	186	17.28	17.45	1.38	5,458,575
Wisconsin	January	3.82	3.89	0.24	3.08	3.10	0.17	5.71	5.67	0.11	241	284	152	20.23	20.40	0.98	147,439,112
	February	3.80	3.88	0.25	3.07	3.09	0.16	5.72	5.67	0.12	265	307	167	17.82	17.97	0.88	135,659,520
	March	3.77	3.86	0.24	3.03	3.05	0.15	5.72	5.68	0.11	271	312	175	18.63	18.79	0.90	135,264,516
	April	3.73	3.83	0.23	2.99	3.00	0.14	5.72	5.68	0.11	263	311	170	17.18	17.31	0.77	131,023,015
	May	3.65	3.72	0.21	2.99	3.00	0.13	5.74	5.70	0.10	255	299	155	18.49	18.62	0.75	101,696,888
	June	3.62	3.65	0.22	2.96	2.99	0.14	5.75	5.71	0.10	268	316	168	20.38	20.50	0.90	85,677,801
	July	3.57	3.62	0.20	2.93	2.93	0.13	5.75	5.68	0.11	290	349	168	18.18	18.19	0.76	83,615,504
	August	3.57	3.61	0.21	2.93	2.94	0.13	5.74	5.67	0.12	302	364	197	17.28	17.31	0.74	68,420,869
	September	3.65	3.74	0.23	3.01	3.03	0.13	5.76	5.69	0.12	279	326	176	16.69	16.86	0.73	63,654,935
	October	3.75	3.88	0.27	3.07	3.11	0.16	5.77	5.71	0.14	244	286	165	17.90	18.26	0.98	64,416,901
	November	3.82	3.93	0.28	3.10	3.12	0.17	5.77	5.70	0.16	231	275	144	16.51	16.73	0.92	64,218,851
	December	3.83	3.96	0.29	3.09	3.11	0.16	5.76	5.69	0.13	234	289	164	16.16	16.35	0.88	65,442,546
State / Percentile Group																	
Illinois	Pct. 1	4.05	4.04	0.41	3.23	3.18	0.25	5.68	5.62	0.12	344	385	159	18.09	18.46	1.65	1,198,314
	Pct. 2	3.82	3.82	0.34	3.07	3.07	0.19	5.67	5.65	0.08	412	373	157	18.76	18.72	1.72	2,026,527
	Pct. 3	3.71	3.72	0.24	3.05	3.07	0.16	5.69	5.67	0.08	270	299	178	18.50	18.49	1.37	3,285,948
	Pct. 4	3.65	3.64	0.20	3.02	3.03	0.14	5.63	5.61	0.08	338	343	202	18.13	18.11	1.36	3,485,808
	Pct. 5	3.80	3.81	0.25	3.02	3.03	0.10	5.70	5.70	0.07	275	273	108	18.58	18.67	1.32	4,623,364
	Pct. 6	3.73	3.75	0.24	3.04	3.05	0.17	5.69	5.68	0.08	320	333	136	18.28	18.26	1.40	12,446,494
	Pct. 7	3.79	3.78	0.17	3.01	3.01	0.11	5.64	5.64	0.11	357	370	120	18.15	18.09	1.49	3,561,628
	Pct. 8	3.78	3.84	0.26	3.12	3.16	0.21	5.75	5.75	0.05	283	305	113	18.41	18.67	1.46	11,444,391
	Pct. 9	3.69	3.71	0.23	3.06	3.09	0.14	5.73	5.72	0.11	310	327	96	18.25	18.26	1.40	27,694,242
	Pct. 10	3.59	3.64	0.13	2.96	3.00	0.10	5.76	5.73	0.04	229	282	105	17.45	17.72	1.30	51,841,019
Indiana	Pct. 1	4.05	4.07	0.48	3.21	3.22	0.29	5.59	5.58	0.16	355	368	228	19.05	19.15	2.03	4,662,669
	Pct. 2	3.94	3.97	0.42	3.15	3.16	0.25	5.62	5.61	0.13	352	355	198	18.66	18.74	1.88	23,617,881
	Pct. 3	3.87	3.89	0.38	3.11	3.12	0.22	5.63	5.62	0.10	345	346	182	18.53	18.53	1.76	62,014,914
	Pct. 4	3.84	3.85	0.35	3.08	3.09	0.20	5.64	5.63	0.09	295	296	148	18.38	18.39	1.61	82,898,990
	Pct. 5	3.86	3.87	0.36	3.10	3.11	0.21	5.64	5.64	0.09	329	333	165	18.46	18.45	1.68	101,845,072
	Pct. 6	3.78	3.79	0.29	3.05	3.06	0.17	5.65	5.64	0.08	304	305	154	18.16	18.17	1.46	126,212,409
	Pct. 7	3.81	3.81	0.30	3.07	3.07	0.16	5.65	5.65	0.09	305	305	143	18.28	18.26	1.50	145,639,226
	Pct. 8	3.80	3.81	0.32	3.08	3.08	0.20	5.67	5.67	0.07	300	303	139	18.29	18.30	1.59	209,533,565
	Pct. 9	3.78	3.81	0.35	3.05	3.06	0.19	5.68	5.68	0.08	287	286	125	18.19	18.21	1.61	277,778,780
	Pct. 10	3.65	3.65	0.20	3.02	3.00	0.12	5.72	5.70	0.07	252	270	118	17.81	17.74	1.33	987,439,829
Iowa	Pct. 5	3.80	3.79	0.10	3.17	3.17	0.10	5.71	5.70	0.08	411	408	128	19.35	19.35	1.32	2,015,436
Kentucky	Pct. 1	3.51	3.62	0.38	3.03	3.08	0.21	5.61	5.59	0.15	408	445	194	17.50	17.77	1.73	4,241,985

APPENDIX A

COMPONENT TEST STATISTICS FOR PRODUCER MILK ASSOCIATED WITH THE MIDEAST MARKETING AREA 1/ 2008

State / Percentile Group (continued)		Butterfat Test			Protein Test			Other Solids Test			Somatic Cell Count			Milk Component Value			Delivery Pounds
		Weighted Average	Simple Average	Standard Deviation	Weighted Average	Simple Average	Standard Deviation	Weighted Average	Simple Average	Standard Deviation	Weighted Average	Simple Average	Standard Deviation	Weighted Average	Simple Average	Standard Deviation	
		percent			percent			percent			(000)			(\$ per cwt.)			
Kentucky	Pct. 2	3.71	3.87	0.43	3.11	3.25	0.27	5.64	5.60	0.14	328	376	141	18.56	18.84	1.95	2,656,962
	Pct. 3	4.03	4.17	0.70	3.10	3.24	0.50	5.64	5.60	0.10	386	380	145	18.69	19.37	2.75	937,810
	Pct. 5	3.58	3.62	0.27	3.00	3.04	0.11	5.62	5.60	0.05	346	375	102	18.28	17.79	1.34	2,618,912
	Pct. 6	3.91	3.93	0.38	3.11	3.11	0.21	5.51	5.51	0.13	398	408	114	18.53	18.50	1.78	2,536,777
Maryland	Pct. 1	4.17	4.19	0.27	3.26	3.31	0.17	5.64	5.62	0.07	401	520	308	19.04	20.00	1.93	273,515
	Pct. 2	4.25	4.18	0.56	3.28	3.23	0.33	5.64	5.60	0.12	407	441	220	19.76	19.40	2.30	1,851,286
	Pct. 3	3.84	3.87	0.29	3.10	3.10	0.15	5.68	5.67	0.09	323	338	229	18.39	18.45	1.37	2,649,411
	Pct. 4	3.90	3.90	0.28	3.12	3.12	0.16	5.67	5.67	0.08	351	358	184	18.61	18.53	1.64	5,519,967
	Pct. 5	3.96	3.97	0.35	3.13	3.14	0.21	5.66	5.66	0.07	431	426	139	18.61	18.65	1.77	5,248,727
	Pct. 6	3.76	3.74	0.39	3.10	3.09	0.12	5.71	5.70	0.07	223	238	88	18.32	18.28	1.53	6,386,774
	Pct. 7	3.88	3.89	0.27	3.15	3.15	0.11	5.70	5.70	0.04	254	251	91	18.78	18.77	1.32	4,864,083
	Pct. 8	3.88	3.87	0.14	3.08	3.08	0.12	5.72	5.72	0.05	193	191	63	18.54	18.52	1.36	5,453,483
Michigan	Pct. 1	3.96	3.96	0.39	3.15	3.15	0.26	5.59	5.55	0.21	378	399	249	18.89	18.74	1.80	10,011,298
	Pct. 2	3.87	3.90	0.41	3.11	3.12	0.25	5.59	5.57	0.15	370	389	214	18.58	18.53	1.88	33,690,125
	Pct. 3	3.87	3.89	0.37	3.11	3.13	0.24	5.63	5.63	0.11	341	343	173	18.57	18.56	1.82	54,029,281
	Pct. 4	3.85	3.86	0.32	3.11	3.12	0.20	5.65	5.64	0.11	341	344	156	18.50	18.49	1.66	82,571,439
	Pct. 5	3.85	3.86	0.34	3.11	3.11	0.21	5.65	5.64	0.10	344	345	162	18.50	18.47	1.70	112,798,143
	Pct. 6	3.79	3.81	0.29	3.09	3.09	0.18	5.66	5.66	0.09	309	310	148	18.37	18.34	1.56	160,214,204
	Pct. 7	3.79	3.79	0.29	3.10	3.10	0.18	5.68	5.67	0.08	308	309	149	18.36	18.33	1.54	240,593,105
	Pct. 8	3.77	3.77	0.29	3.09	3.09	0.17	5.69	5.69	0.08	283	285	136	18.30	18.28	1.52	363,225,521
	Pct. 9	3.74	3.74	0.25	3.06	3.06	0.15	5.71	5.70	0.07	245	248	113	18.18	18.18	1.45	830,262,553
	Pct. 10	3.59	3.64	0.23	3.03	3.03	0.14	5.71	5.71	0.10	214	217	133	17.85	17.92	1.41	5,108,184,971
Minnesota	Pct. 1	4.25	4.21	0.28	3.24	3.22	0.15	5.65	5.62	0.08	257	293	99	17.36	17.34	0.77	351,534
	Pct. 2	3.80	3.81	0.46	3.15	3.15	0.14	5.66	5.64	0.09	483	513	174	18.40	18.53	1.56	1,668,858
	Pct. 3	3.79	3.79	0.17	3.08	3.08	0.12	5.75	5.75	0.03	240	239	58	18.67	18.64	1.11	1,390,007
	Pct. 6	3.70	3.71	0.13	3.02	3.02	0.06	5.72	5.71	0.06	209	213	88	18.42	18.42	1.19	2,796,917
New York	Pct. 1	4.08	4.07	0.46	3.23	3.24	0.26	5.59	5.56	0.18	314	362	228	19.20	19.02	1.80	1,498,477
	Pct. 2	3.87	3.90	0.38	3.09	3.12	0.23	5.58	5.57	0.12	346	351	219	18.16	18.42	1.91	7,944,668
	Pct. 3	3.80	3.81	0.27	3.01	3.01	0.19	5.61	5.59	0.14	335	335	212	17.85	17.93	1.58	11,339,949
	Pct. 4	3.77	3.77	0.30	3.06	3.05	0.20	5.61	5.61	0.16	311	318	182	17.94	17.99	1.56	25,113,216
	Pct. 5	3.83	3.84	0.32	3.07	3.07	0.17	5.63	5.62	0.10	307	309	155	18.24	18.27	1.67	20,690,995
	Pct. 6	3.81	3.81	0.24	3.07	3.07	0.12	5.64	5.64	0.08	332	334	169	18.13	18.19	1.45	37,094,574
	Pct. 7	3.83	3.84	0.32	3.09	3.09	0.17	5.67	5.67	0.10	272	274	106	18.24	18.37	1.60	43,423,519
	Pct. 8	3.82	3.80	0.26	3.08	3.07	0.13	5.69	5.68	0.09	261	275	137	18.18	18.25	1.46	70,765,136
	Pct. 9	3.83	3.84	0.32	3.08	3.09	0.18	5.71	5.71	0.08	257	260	148	18.27	18.39	1.57	65,847,175
	Pct. 10	3.65	3.70	0.24	3.04	3.06	0.17	5.71	5.72	0.07	225	231	98	17.81	18.01	1.53	1,197,367,230
Ohio	Pct. 1	4.03	4.05	0.51	3.18	3.21	0.33	5.59	5.55	0.20	367	386	260	19.29	19.17	2.23	15,973,640
	Pct. 2	4.05	4.09	0.51	3.20	3.22	0.30	5.61	5.59	0.14	361	365	195	19.25	19.21	2.11	53,757,702
	Pct. 3	3.98	4.00	0.45	3.17	3.19	0.27	5.61	5.60	0.11	352	360	189	18.89	18.93	1.97	83,984,830

APPENDIX A

COMPONENT TEST STATISTICS FOR PRODUCER MILK ASSOCIATED WITH THE MIDEAST MARKETING AREA 1/ 2008

		Butterfat Test			Protein Test			Other Solids Test			Somatic Cell Count			Milk Component Value			Delivery Pounds
		Weighted Average	Simple Average	Standard Deviation	Weighted Average	Simple Average	Standard Deviation	Weighted Average	Simple Average	Standard Deviation	Weighted Average	Simple Average	Standard Deviation	Weighted Average	Simple Average	Standard Deviation	
		percent			percent			percent			(000)			(\$ per cwt.)			
State / Percentile Group (continued)																	
Ohio	Pct. 4	3.95	3.95	0.43	3.17	3.17	0.25	5.64	5.63	0.10	325	330	169	18.85	18.85	1.89	126,019,457
	Pct. 5	3.90	3.91	0.38	3.13	3.14	0.22	5.64	5.64	0.09	327	329	155	18.63	18.65	1.76	171,383,621
	Pct. 6	3.88	3.89	0.37	3.12	3.12	0.21	5.65	5.65	0.09	330	334	156	18.54	18.54	1.70	225,817,628
	Pct. 7	3.83	3.84	0.33	3.10	3.10	0.19	5.66	5.66	0.09	304	306	139	18.41	18.41	1.64	361,958,734
	Pct. 8	3.79	3.80	0.31	3.08	3.09	0.16	5.67	5.67	0.07	296	298	128	18.31	18.30	1.52	463,971,847
	Pct. 9	3.79	3.81	0.32	3.09	3.09	0.19	5.68	5.68	0.07	265	269	116	18.35	18.37	1.61	709,015,413
	Pct. 10	3.66	3.70	0.30	3.06	3.06	0.16	5.71	5.70	0.06	249	254	103	18.03	18.10	1.53	2,198,848,474
Pennsylvania	Pct. 1	3.94	3.99	0.45	3.15	3.17	0.29	5.62	5.54	0.20	343	386	252	18.49	18.67	2.07	14,416,814
	Pct. 2	3.88	3.90	0.37	3.09	3.09	0.24	5.59	5.55	0.16	376	412	216	18.30	18.33	1.81	35,263,234
	Pct. 3	3.96	3.99	0.39	3.12	3.13	0.23	5.60	5.59	0.12	375	381	203	18.55	18.65	1.89	54,600,594
	Pct. 4	3.89	3.91	0.34	3.10	3.11	0.20	5.62	5.61	0.15	368	376	180	18.40	18.47	1.68	73,236,473
	Pct. 5	3.83	3.84	0.33	3.08	3.09	0.17	5.63	5.63	0.11	386	390	177	18.24	18.26	1.62	107,090,214
	Pct. 6	3.86	3.87	0.28	3.11	3.11	0.17	5.65	5.64	0.09	365	371	164	18.43	18.43	1.54	129,737,559
	Pct. 7	3.81	3.81	0.29	3.09	3.09	0.16	5.67	5.66	0.09	343	347	162	18.28	18.31	1.51	156,672,581
	Pct. 8	3.79	3.79	0.30	3.09	3.09	0.16	5.68	5.68	0.07	327	332	145	18.26	18.27	1.55	239,493,182
	Pct. 9	3.79	3.80	0.31	3.09	3.10	0.17	5.70	5.69	0.09	307	309	131	18.29	18.34	1.54	275,070,435
	Pct. 10	3.74	3.77	0.36	3.07	3.09	0.19	5.68	5.69	0.07	302	291	124	18.12	18.27	1.74	320,124,049
Vermont	Pct. 1	3.52	3.63	0.29	3.04	3.04	0.07	5.67	5.64	0.09	313	320	25	18.15	17.88	1.43	368,625
West Virginia	Pct. 1	4.09	4.04	0.60	3.34	3.31	0.21	5.36	5.34	0.27	647	605	273	19.32	19.03	1.97	346,182
	Pct. 2	4.07	4.04	0.46	3.20	3.18	0.27	5.52	5.48	0.18	311	329	153	19.27	19.03	1.97	2,615,168
	Pct. 3	3.99	3.98	0.34	3.28	3.29	0.23	5.60	5.58	0.11	350	369	131	18.98	19.22	1.93	2,706,642
	Pct. 4	4.01	4.02	0.37	3.20	3.21	0.21	5.66	5.66	0.08	281	277	122	19.17	19.13	1.90	5,245,927
	Pct. 5	3.99	3.97	0.41	3.19	3.21	0.24	5.61	5.59	0.10	336	360	200	19.01	18.93	1.81	6,002,736
	Pct. 6	3.88	3.93	0.43	3.18	3.19	0.26	5.61	5.60	0.07	400	398	193	18.83	18.85	1.80	5,561,033
	Pct. 8	3.87	3.86	0.24	3.19	3.19	0.10	5.73	5.73	0.05	352	355	113	18.76	18.76	1.43	12,253,631
	Pct. 9	4.03	4.09	0.31	3.23	3.25	0.18	5.69	5.68	0.07	356	377	112	19.23	19.31	1.64	14,115,380
	Pct. 10	3.90	3.97	0.54	3.22	3.23	0.24	5.72	5.71	0.04	389	377	141	18.99	19.09	2.13	14,508,773
	Wisconsin	Pct. 1	3.92	3.97	0.35	3.10	3.10	0.23	5.60	5.56	0.19	357	369	223	19.05	18.64	1.81
Pct. 2		3.90	3.92	0.34	3.09	3.09	0.21	5.64	5.62	0.13	349	365	204	18.70	18.61	1.76	33,363,766
Pct. 3		3.83	3.84	0.26	3.04	3.05	0.17	5.67	5.66	0.10	313	320	150	18.46	18.41	1.50	47,028,114
Pct. 4		3.82	3.84	0.28	3.05	3.07	0.18	5.67	5.65	0.14	322	353	191	18.46	18.43	1.53	41,149,297
Pct. 5		3.79	3.80	0.23	3.02	3.02	0.14	5.70	5.69	0.09	283	302	166	18.30	18.20	1.48	60,345,953
Pct. 6		3.79	3.79	0.20	3.03	3.03	0.14	5.70	5.70	0.09	312	318	179	18.36	18.26	1.39	69,019,321
Pct. 7		3.79	3.80	0.21	3.04	3.04	0.14	5.71	5.70	0.08	280	289	150	18.28	18.21	1.44	90,988,078
Pct. 8		3.75	3.76	0.21	3.03	3.02	0.13	5.74	5.73	0.08	278	281	121	18.09	18.03	1.43	111,961,861
Pct. 9		3.72	3.73	0.18	3.01	3.01	0.12	5.74	5.74	0.07	248	257	123	18.12	18.03	1.38	180,833,317
Pct. 10		3.66	3.68	0.23	3.01	3.01	0.13	5.77	5.77	0.05	233	224	82	18.04	18.03	1.45	502,320,025

APPENDIX A

COMPONENT TEST STATISTICS FOR PRODUCER MILK ASSOCIATED WITH THE MIDEAST MARKETING AREA 1/ 2008

Percentile Group / Month		Butterfat Test			Protein Test			Other Solids Test			Somatic Cell Count			Milk Component Value			Delivery Pounds
		Weighted Average	Simple Average	Standard Deviation	Weighted Average	Simple Average	Standard Deviation	Weighted Average	Simple Average	Standard Deviation	Weighted Average	Simple Average	Standard Deviation	Weighted Average	Simple Average	Standard Deviation	
		percent			percent			percent			(000)			(\$ per cwt.)			
Pct. 1	January	4.00	4.08	0.41	3.19	3.22	0.27	5.61	5.55	0.21	352	388	252	20.85	21.05	1.63	11,884,402
	February	4.02	4.10	0.42	3.16	3.20	0.28	5.58	5.53	0.21	395	430	281	18.32	18.56	1.55	5,366,778
	March	4.06	4.09	0.42	3.15	3.18	0.28	5.55	5.50	0.23	438	450	318	19.35	19.50	1.69	4,175,267
	April	3.95	3.95	0.38	3.07	3.10	0.27	5.57	5.54	0.21	410	412	248	17.66	17.77	1.46	4,089,970
	May	3.79	3.82	0.37	3.13	3.15	0.24	5.63	5.59	0.17	340	363	213	19.21	19.32	1.42	4,240,542
	June	3.69	3.75	0.35	3.05	3.08	0.23	5.64	5.60	0.15	370	394	223	20.79	20.98	1.54	4,623,748
	July	3.71	3.74	0.35	2.99	3.01	0.23	5.60	5.56	0.15	412	445	242	18.52	18.60	1.38	3,870,625
	August	3.67	3.74	0.35	3.01	3.03	0.23	5.59	5.55	0.18	368	412	246	17.66	17.82	1.34	4,503,465
	September	3.74	3.88	0.39	3.09	3.13	0.24	5.57	5.54	0.18	388	393	207	17.00	17.39	1.37	5,528,571
	October	4.08	4.12	0.46	3.29	3.29	0.28	5.57	5.53	0.20	332	345	208	19.21	19.28	1.69	3,892,452
	November	4.24	4.25	0.49	3.30	3.31	0.31	5.60	5.55	0.21	300	334	231	17.85	17.86	1.72	3,846,630
	December	4.23	4.25	0.50	3.29	3.29	0.31	5.64	5.58	0.20	284	318	219	17.37	17.38	1.68	7,092,938
Pct. 2	January	4.02	4.11	0.44	3.18	3.21	0.27	5.63	5.59	0.15	340	360	192	20.87	21.09	1.72	25,534,813
	February	4.02	4.09	0.41	3.16	3.18	0.27	5.62	5.59	0.15	372	384	210	18.36	18.52	1.52	19,581,396
	March	4.02	4.07	0.40	3.13	3.16	0.26	5.61	5.59	0.15	379	393	217	19.26	19.45	1.60	18,618,687
	April	3.94	3.97	0.37	3.08	3.09	0.24	5.62	5.60	0.14	380	386	202	17.71	17.78	1.34	19,428,069
	May	3.84	3.86	0.39	3.13	3.13	0.23	5.64	5.63	0.14	345	352	177	19.27	19.30	1.44	16,131,987
	June	3.74	3.76	0.36	3.04	3.05	0.22	5.64	5.63	0.13	374	386	204	20.83	20.92	1.51	15,288,577
	July	3.70	3.72	0.34	2.98	2.99	0.21	5.60	5.59	0.13	419	427	222	18.49	18.53	1.32	14,136,007
	August	3.71	3.72	0.34	3.02	3.03	0.21	5.59	5.57	0.14	396	408	216	17.72	17.77	1.30	15,209,851
	September	3.85	3.87	0.37	3.11	3.12	0.22	5.57	5.54	0.15	374	387	202	17.27	17.34	1.30	13,663,386
	October	4.01	4.05	0.43	3.25	3.27	0.26	5.57	5.54	0.15	330	345	189	18.94	19.06	1.63	13,660,756
	November	4.15	4.18	0.47	3.27	3.28	0.28	5.58	5.55	0.15	319	337	201	17.55	17.65	1.66	13,153,708
	December	4.17	4.22	0.51	3.24	3.27	0.31	5.60	5.55	0.16	315	346	205	17.11	17.23	1.70	14,815,625
Pct. 3	January	4.02	4.08	0.40	3.17	3.20	0.25	5.64	5.63	0.11	311	323	176	20.83	21.03	1.58	31,804,640
	February	4.00	4.05	0.37	3.15	3.18	0.24	5.64	5.63	0.11	334	346	193	18.32	18.49	1.36	28,588,158
	March	4.00	4.05	0.35	3.12	3.15	0.22	5.63	5.62	0.10	348	359	200	19.24	19.42	1.37	30,920,682
	April	3.93	3.95	0.33	3.06	3.08	0.21	5.64	5.63	0.10	342	350	178	17.67	17.75	1.19	32,158,986
	May	3.81	3.82	0.33	3.11	3.12	0.20	5.67	5.66	0.10	333	336	172	19.17	19.22	1.25	29,583,467
	June	3.72	3.73	0.31	3.03	3.04	0.19	5.65	5.65	0.10	369	373	184	20.75	20.79	1.32	26,341,444
	July	3.67	3.68	0.30	2.97	2.97	0.19	5.62	5.61	0.11	404	411	202	18.38	18.41	1.20	25,338,541
	August	3.67	3.68	0.30	3.01	3.02	0.19	5.61	5.59	0.11	399	399	193	17.63	17.68	1.16	25,913,800
	September	3.81	3.82	0.33	3.10	3.11	0.21	5.59	5.57	0.11	364	369	184	17.18	17.23	1.22	24,026,778
	October	3.97	3.98	0.38	3.24	3.24	0.24	5.59	5.58	0.12	319	323	164	18.83	18.88	1.46	23,521,993
	November	4.10	4.12	0.41	3.25	3.26	0.26	5.60	5.59	0.11	304	311	156	17.42	17.50	1.47	22,047,361
	December	4.14	4.18	0.43	3.22	3.24	0.27	5.61	5.59	0.11	317	330	190	16.98	17.09	1.50	24,144,887
Pct. 4	January	4.00	4.04	0.36	3.17	3.19	0.22	5.66	5.64	0.11	299	309	166	20.82	20.97	1.39	40,880,535
	February	3.99	4.02	0.34	3.16	3.18	0.21	5.66	5.65	0.11	321	329	177	18.35	18.47	1.22	38,235,700
	March	3.98	4.01	0.33	3.13	3.15	0.20	5.65	5.64	0.11	332	339	183	19.27	19.40	1.25	41,080,913
	April	3.90	3.92	0.30	3.07	3.08	0.19	5.66	5.65	0.10	326	333	167	17.65	17.71	1.08	42,103,018
	May	3.77	3.78	0.32	3.10	3.10	0.18	5.68	5.68	0.10	312	316	158	19.09	19.11	1.13	41,383,228

APPENDIX A

COMPONENT TEST STATISTICS FOR PRODUCER MILK ASSOCIATED WITH THE MIDEAST MARKETING AREA 1/ 2008

Percentile Group / Month (continued)	Butterfat Test			Protein Test			Other Solids Test			Somatic Cell Count			Milk Component Value			Delivery Pounds	
	Weighted Average	Simple Average	Standard Deviation	Weighted Average	Simple Average	Standard Deviation	Weighted Average	Simple Average	Standard Deviation	Weighted Average	Simple Average	Standard Deviation	Weighted Average	Simple Average	Standard Deviation		
	percent			percent			percent			(000)			(\$ per cwt.)				
Pct. 4	June	3.68	3.68	0.29	3.01	3.02	0.17	5.66	5.66	0.14	350	349	170	20.63	20.66	1.19	36,568,069
	July	3.63	3.64	0.27	2.96	2.96	0.17	5.64	5.63	0.11	386	388	180	18.31	18.33	1.09	35,144,579
	August	3.64	3.65	0.29	3.01	3.01	0.18	5.62	5.61	0.12	371	377	175	17.60	17.61	1.08	36,644,738
	September	3.78	3.79	0.30	3.09	3.09	0.18	5.60	5.59	0.12	352	355	161	17.10	17.12	1.08	33,375,772
	October	3.93	3.94	0.34	3.21	3.22	0.20	5.60	5.59	0.12	306	310	147	18.69	18.73	1.26	34,190,670
	November	4.06	4.07	0.36	3.24	3.24	0.22	5.62	5.61	0.12	288	295	145	17.32	17.37	1.27	31,847,103
	December	4.11	4.11	0.37	3.23	3.23	0.23	5.62	5.61	0.11	296	307	160	16.98	16.99	1.25	35,785,411
Pct. 5	January	3.98	4.01	0.35	3.16	3.18	0.21	5.66	5.65	0.09	310	318	162	20.73	20.84	1.34	54,765,790
	February	3.96	4.00	0.34	3.14	3.16	0.20	5.66	5.65	0.09	329	336	174	18.25	18.37	1.18	51,981,335
	March	3.96	3.99	0.33	3.12	3.14	0.20	5.65	5.64	0.09	344	350	178	19.20	19.32	1.22	54,514,652
	April	3.89	3.90	0.31	3.06	3.07	0.17	5.66	5.66	0.09	334	341	165	17.61	17.66	1.03	55,677,212
	May	3.77	3.77	0.31	3.08	3.09	0.17	5.69	5.68	0.09	319	324	149	18.99	19.02	1.07	55,583,035
	June	3.68	3.68	0.28	3.00	3.00	0.16	5.67	5.67	0.09	351	356	159	20.56	20.59	1.12	49,914,305
	July	3.63	3.63	0.26	2.96	2.96	0.16	5.65	5.64	0.09	392	393	177	18.29	18.29	0.99	47,542,624
	August	3.64	3.63	0.27	3.00	3.00	0.16	5.63	5.62	0.10	380	387	173	17.55	17.54	0.98	46,414,573
	September	3.76	3.76	0.29	3.07	3.08	0.16	5.62	5.61	0.10	357	361	157	17.02	17.02	0.99	43,751,145
	October	3.92	3.92	0.32	3.19	3.20	0.19	5.62	5.61	0.10	316	323	140	18.59	18.61	1.17	44,951,872
	November	4.02	4.04	0.34	3.21	3.22	0.21	5.63	5.62	0.10	301	308	145	17.17	17.21	1.20	42,420,777
	December	4.06	4.07	0.38	3.20	3.22	0.23	5.63	5.62	0.09	316	320	172	16.82	16.87	1.24	47,145,853
Pct. 6	January	3.94	3.96	0.30	3.15	3.16	0.18	5.67	5.66	0.09	297	302	152	20.65	20.72	1.12	72,748,753
	February	3.92	3.95	0.30	3.14	3.15	0.17	5.67	5.66	0.08	309	318	165	18.20	18.29	1.01	70,369,601
	March	3.93	3.95	0.29	3.12	3.13	0.17	5.66	5.65	0.08	325	332	171	19.15	19.24	1.04	72,131,431
	April	3.85	3.86	0.26	3.06	3.07	0.16	5.67	5.67	0.08	320	326	160	17.55	17.59	0.88	71,128,826
	May	3.73	3.74	0.27	3.05	3.06	0.15	5.70	5.69	0.08	310	311	148	18.84	18.86	0.90	71,367,271
	June	3.64	3.65	0.25	2.98	2.99	0.14	5.68	5.68	0.08	343	343	158	20.44	20.46	0.97	63,870,895
	July	3.61	3.62	0.24	2.95	2.95	0.14	5.66	5.66	0.09	375	375	167	18.23	18.25	0.89	63,246,736
	August	3.63	3.63	0.24	2.99	2.99	0.14	5.64	5.64	0.09	370	373	170	17.50	17.51	0.88	61,060,454
	September	3.74	3.75	0.26	3.06	3.06	0.15	5.63	5.63	0.09	350	355	159	16.93	16.96	0.88	58,488,454
	October	3.90	3.91	0.29	3.18	3.18	0.17	5.62	5.62	0.10	312	315	140	18.51	18.52	1.04	58,279,421
	November	4.00	4.00	0.30	3.21	3.21	0.19	5.63	5.63	0.09	293	297	134	17.13	17.15	1.06	55,773,341
	December	4.04	4.04	0.32	3.20	3.20	0.19	5.63	5.63	0.09	302	303	151	16.80	16.80	1.05	61,836,015
Pct. 7	January	3.93	3.94	0.29	3.15	3.16	0.17	5.68	5.67	0.09	283	285	132	20.68	20.71	1.04	94,802,977
	February	3.91	3.93	0.28	3.14	3.15	0.16	5.68	5.67	0.08	295	300	144	18.23	18.26	0.93	87,645,769
	March	3.90	3.92	0.28	3.12	3.13	0.16	5.67	5.66	0.08	299	307	155	19.17	19.22	0.99	94,647,346
	April	3.82	3.83	0.26	3.06	3.07	0.15	5.68	5.68	0.08	300	304	143	17.55	17.58	0.85	94,068,433
	May	3.72	3.73	0.26	3.05	3.05	0.14	5.70	5.70	0.08	294	295	135	18.82	18.84	0.86	96,012,726
	June	3.64	3.64	0.25	2.98	2.98	0.14	5.69	5.69	0.08	322	323	144	20.44	20.45	0.94	87,218,602
	July	3.61	3.61	0.24	2.95	2.95	0.13	5.68	5.68	0.08	352	355	157	18.25	18.25	0.84	85,713,481
	August	3.62	3.62	0.24	2.99	2.99	0.14	5.66	5.66	0.08	353	358	157	17.49	17.50	0.83	86,444,751
	September	3.73	3.73	0.24	3.05	3.05	0.14	5.65	5.64	0.09	336	338	147	16.90	16.91	0.83	79,267,544
	October	3.88	3.89	0.27	3.16	3.16	0.16	5.64	5.64	0.09	300	302	133	18.42	18.43	1.00	82,000,368

APPENDIX A

COMPONENT TEST STATISTICS FOR PRODUCER MILK ASSOCIATED WITH THE MIDEAST MARKETING AREA 1/ 2008

Percentile Group / Month (continued)	Butterfat Test			Protein Test			Other Solids Test			Somatic Cell Count			Milk Component Value			Delivery Pounds	
	Weighted Average	Simple Average	Standard Deviation	Weighted Average	Simple Average	Standard Deviation	Weighted Average	Simple Average	Standard Deviation	Weighted Average	Simple Average	Standard Deviation	Weighted Average	Simple Average	Standard Deviation		
	percent			percent			percent			(000)			(\$ per cwt.)				
Pct. 7	November	3.96	3.97	0.30	3.20	3.20	0.18	5.65	5.64	0.09	281	282	133	17.04	17.05	1.03	79,424,427
	December	4.00	4.00	0.31	3.20	3.20	0.18	5.65	5.65	0.08	288	290	153	16.73	16.73	1.01	88,573,721
Pct. 8	January	3.89	3.90	0.29	3.14	3.15	0.16	5.69	5.69	0.07	271	274	121	20.58	20.62	1.02	131,762,644
	February	3.87	3.88	0.28	3.13	3.14	0.16	5.69	5.69	0.07	284	287	133	18.12	18.17	0.91	125,770,359
	March	3.86	3.87	0.27	3.12	3.12	0.15	5.68	5.67	0.07	292	296	140	19.10	19.12	0.94	129,485,922
	April	3.79	3.79	0.26	3.06	3.06	0.14	5.69	5.69	0.07	286	291	133	17.49	17.50	0.83	130,299,500
	May	3.70	3.70	0.26	3.04	3.04	0.13	5.72	5.71	0.07	286	288	128	18.75	18.76	0.85	133,055,401
	June	3.62	3.62	0.25	2.98	2.98	0.13	5.71	5.71	0.07	314	316	140	20.42	20.43	0.93	122,215,243
	July	3.59	3.59	0.23	2.95	2.95	0.13	5.70	5.70	0.07	342	345	150	18.26	18.25	0.85	121,045,234
	August	3.62	3.62	0.24	2.99	2.99	0.13	5.68	5.68	0.07	341	345	147	17.53	17.53	0.82	121,201,073
	September	3.72	3.72	0.26	3.06	3.05	0.13	5.67	5.67	0.08	321	326	139	16.91	16.91	0.82	115,533,641
	October	3.85	3.86	0.28	3.15	3.15	0.15	5.66	5.66	0.08	287	290	122	18.34	18.35	0.95	117,080,301
	November	3.93	3.94	0.29	3.19	3.19	0.16	5.67	5.66	0.08	262	268	118	16.97	16.99	0.94	116,021,673
	December	3.96	3.97	0.31	3.19	3.19	0.17	5.67	5.67	0.07	265	271	120	16.66	16.69	0.96	130,839,229
Pct. 9	January	3.86	3.88	0.29	3.13	3.14	0.16	5.70	5.70	0.07	238	240	106	20.53	20.59	1.01	217,310,552
	February	3.84	3.86	0.29	3.12	3.13	0.16	5.70	5.70	0.07	250	252	119	18.07	18.14	0.93	208,134,294
	March	3.82	3.85	0.29	3.10	3.11	0.16	5.69	5.68	0.07	258	263	131	19.01	19.09	0.99	217,148,567
	April	3.75	3.77	0.27	3.04	3.05	0.14	5.70	5.70	0.07	258	261	124	17.41	17.46	0.83	213,341,316
	May	3.68	3.69	0.26	3.02	3.02	0.13	5.72	5.72	0.07	259	262	118	18.68	18.71	0.87	211,571,947
	June	3.62	3.62	0.24	2.96	2.96	0.14	5.72	5.72	0.07	284	287	123	20.35	20.38	0.95	197,491,292
	July	3.59	3.59	0.24	2.94	2.94	0.14	5.72	5.71	0.07	306	310	131	18.23	18.26	0.87	197,814,608
	August	3.62	3.63	0.24	2.98	2.98	0.14	5.70	5.70	0.08	306	310	130	17.52	17.55	0.86	190,910,213
	September	3.72	3.72	0.25	3.04	3.04	0.14	5.68	5.68	0.08	291	296	121	16.88	16.91	0.86	180,677,243
	October	3.85	3.86	0.28	3.14	3.14	0.16	5.67	5.67	0.08	260	264	111	18.31	18.35	1.01	185,848,716
	November	3.91	3.93	0.30	3.17	3.18	0.17	5.68	5.68	0.08	238	241	100	16.91	16.97	0.99	180,080,322
	December	3.94	3.96	0.31	3.18	3.19	0.18	5.68	5.68	0.07	239	242	109	16.64	16.70	0.99	199,405,509
Pct. 10	January	3.70	3.76	0.26	3.09	3.10	0.14	5.72	5.71	0.06	226	223	98	20.14	20.26	0.88	859,214,168
	February	3.69	3.74	0.26	3.08	3.10	0.18	5.71	5.71	0.06	230	230	101	17.76	17.87	0.95	826,644,170
	March	3.68	3.73	0.26	3.07	3.08	0.13	5.70	5.70	0.06	230	232	105	18.69	18.79	0.84	870,996,665
	April	3.61	3.66	0.24	3.02	3.02	0.13	5.71	5.70	0.06	224	231	108	17.15	17.22	0.75	887,236,017
	May	3.55	3.59	0.24	3.00	3.00	0.12	5.74	5.73	0.06	220	229	100	18.41	18.48	0.79	906,044,753
	June	3.51	3.54	0.22	2.95	2.95	0.12	5.74	5.73	0.06	237	249	112	20.17	20.20	0.82	847,158,982
	July	3.48	3.52	0.21	2.93	2.93	0.11	5.74	5.73	0.06	251	266	118	18.08	18.11	0.72	869,718,043
	August	3.52	3.55	0.21	2.96	2.96	0.12	5.72	5.71	0.06	249	267	114	17.34	17.38	0.71	873,261,104
	September	3.58	3.63	0.22	3.01	3.01	0.12	5.71	5.70	0.07	245	258	107	16.58	16.66	0.71	838,393,573
	October	3.68	3.73	0.24	3.08	3.09	0.13	5.71	5.69	0.06	223	237	93	17.81	17.94	0.81	870,375,366
	November	3.73	3.79	0.25	3.13	3.13	0.18	5.69	5.69	0.21	225	226	233	16.45	16.58	0.86	850,875,519
	December	3.77	3.82	0.26	3.13	3.13	0.14	5.70	5.69	0.08	203	213	87	16.25	16.34	0.76	908,080,379

APPENDIX B

WEIGHTED AVERAGE COMPONENT TESTS BY STATE AND COUNTY, 2008

State/County	FIPS	Butterfat <i>percent</i>	Protein <i>percent</i>	Other Solids <i>percent</i>	SCC <i>(000)</i>	Milk Component Value <i>\$ per cwt.</i>
ILLINOIS						
CARROLL	17015	3.80	3.11	5.73	290	18.62
CHAMPAIGN	17019	R	R	R	R	R
GRUNDY	17063	R	R	R	R	R
IROQUOIS	17075	3.76	3.05	5.67	252	17.90
JO DAVIESS	17085	3.65	3.00	5.72	299	18.46
KANE	17089	R	R	R	R	R
KANKAKEE	17091	3.77	3.12	5.55	410	18.15
OGLE	17141	R	R	R	R	R
ROCK ISLAND	17161	R	R	R	R	R
STEPHENSON	17177	3.63	2.98	5.77	226	17.46
VERMILION	17183	R	R	R	R	R
WHITESIDE	17195	R	R	R	R	R
WILL	17197	3.66	3.07	5.67	405	17.97
WINNEBAGO	17201	R	R	R	R	R
INDIANA						
ADAMS	18001	3.74	3.08	5.70	299	18.14
ALLEN	18003	3.74	3.08	5.69	301	18.22
BARTHOLOMEW	18005	3.74	3.13	5.70	268	18.57
BENTON	18007	R	R	R	R	R
BOONE	18011	3.88	3.12	5.65	254	18.61
CARROLL	18015	R	R	R	R	R
CASS	18017	3.62	3.06	5.73	271	17.76
CLAY	18021	3.94	3.21	5.67	410	20.19
CLINTON	18023	R	R	R	R	R
DAVIESS	18027	R	R	R	R	R
DE KALB	18033	3.60	3.03	5.68	334	17.98
DEARBORN	18029	R	R	R	R	R
DECATUR	18031	4.10	3.24	5.66	279	19.41
DELAWARE	18035	3.70	3.04	5.62	398	17.98
ELKHART	18039	3.76	3.01	5.67	285	18.01
FAYETTE	18041	3.79	3.00	5.68	299	17.96
FOUNTAIN	18045	R	R	R	R	R
FRANKLIN	18047	3.76	3.06	5.70	326	18.02
FULTON	18049	3.68	2.98	5.64	314	17.69
GRANT	18053	3.96	3.16	5.68	259	18.93
GREENE	18055	R	R	R	R	R
HAMILTON	18057	R	R	R	R	R
HANCOCK	18059	3.89	3.08	5.54	513	18.39
HENDRICKS	18063	4.39	3.40	5.67	277	20.48
HENRY	18065	3.64	3.07	5.72	344	18.02
HOWARD	18067	3.85	3.09	5.69	288	18.36
HUNTINGTON	18069	3.67	3.09	5.72	318	18.20
JACKSON	18071	3.98	3.24	5.69	312	19.20

APPENDIX B

WEIGHTED AVERAGE COMPONENT TESTS BY STATE AND COUNTY, 2008

State/County	FIPS	Butterfat	Protein	Other Solids	SCC	Milk Component Value
		<i>percent</i>	<i>percent</i>	<i>percent</i>	<i>(000)</i>	<i>\$ per cwt.</i>
Indiana (cont.) JASPER	18073	3.74	2.94	5.71	104	17.64
JAY	18075	3.71	3.06	5.65	365	18.01
JEFFERSON	18077	3.86	3.08	5.61	397	18.44
JOHNSON	18081	3.70	3.06	5.73	323	18.21
KOSCIUSKO	18085	3.74	2.99	5.69	242	17.88
LA PORTE	18091	3.61	3.06	5.69	318	17.77
LAGRANGE	18087	3.79	3.06	5.65	283	18.24
LAKE	18089	3.64	3.02	5.65	269	17.88
MADISON	18095	R	R	R	R	R
MARSHALL	18099	3.79	3.07	5.70	235	18.31
MIAMI	18103	3.73	3.01	5.64	429	17.82
MONTGOMERY	18107	3.72	3.07	5.64	358	17.98
MORGAN	18109	3.76	3.03	5.58	310	17.97
NEWTON	18111	3.70	3.06	5.74	190	17.57
NOBLE	18113	3.76	3.09	5.70	264	18.34
OWEN	18119	R	R	R	R	R
PARKE	18121	3.75	3.06	5.66	333	18.22
PORTER	18127	3.79	3.06	5.60	354	18.15
PULASKI	18131	3.57	3.02	5.70	226	17.81
PUTNAM	18133	R	R	R	R	R
RANDOLPH	18135	3.63	3.05	5.67	338	17.94
RIPLEY	18137	R	R	R	R	R
RUSH	18139	3.82	3.11	5.68	354	18.38
SHELBY	18145	3.77	3.13	5.67	338	18.51
SPENCER	18147	R	R	R	R	R
ST. JOSEPH	18141	3.70	3.02	5.66	309	17.88
STARKE	18149	R	R	R	R	R
STEUBEN	18151	3.81	3.10	5.69	328	18.35
SWITZERLAND	18155	R	R	R	R	R
TIPPECANOE	18157	3.60	3.02	5.68	192	17.81
TIPTON	18159	R	R	R	R	R
UNION	18161	R	R	R	R	R
VIGO	18167	R	R	R	R	R
WABASH	18169	3.66	3.00	5.73	219	17.84
WAYNE	18177	3.74	3.04	5.66	270	18.08
WELLS	18179	3.61	3.06	5.75	201	17.93
WHITE	18181	3.87	3.10	5.68	266	18.59
WHITLEY	18183	3.73	3.01	5.69	306	17.87
IOWA						
ALLAMAKEE	19005	R	R	R	R	R
DUBUQUE	19061	3.69	3.06	5.72	308	18.85
JACKSON	19097	R	R	R	R	R

APPENDIX B

WEIGHTED AVERAGE COMPONENT TESTS BY STATE AND COUNTY, 2008

State/County	FIPS	Butterfat <i>percent</i>	Protein <i>percent</i>	Other Solids <i>percent</i>	SCC <i>(000)</i>	Milk Component Value <i>\$ per cwt.</i>
KENTUCKY						
ADAIR	21001	R	R	R	R	R
BOONE	21015	R	R	R	R	R
BRACKEN	21023	3.89	3.12	5.62	400	18.48
CASEY	21045	R	R	R	R	R
CHRISTIAN	21047	R	R	R	R	R
FLEMING	21069	3.35	2.94	5.59	435	15.78
FRANKLIN	21073	R	R	R	R	R
GALLATIN	21077	R	R	R	R	R
GRANT	21081	R	R	R	R	R
HARRISON	21097	R	R	R	R	R
HART	21099	R	R	R	R	R
HENRY	21103	3.47	3.04	5.57	456	16.29
KENTON	21117	R	R	R	R	R
LINCOLN	21137	3.76	3.03	5.66	396	17.84
MARION	21155	3.46	2.94	5.69	295	19.98
MASON	21161	3.66	3.05	5.61	399	17.88
MERCER	21167	3.59	3.06	5.63	483	20.57
METCALFE	21169	R	R	R	R	R
NELSON	21179	3.17	3.02	5.74	299	19.91
NICHOLAS	21181	R	R	R	R	R
PULASKI	21199	3.44	2.90	5.53	453	16.77
ROBERTSON	21201	3.96	3.40	5.63	418	19.30
SHELBY	21211	3.43	2.95	5.62	360	16.92
TODD	21219	4.22	3.28	5.58	339	19.77
TRIGG	21221	R	R	R	R	R
WASHINGTON	21229	3.42	2.95	5.72	328	19.93
MARYLAND						
ALLEGANY	24001	R	R	R	R	R
FREDERICK	24021	R	R	R	R	R
GARRETT	24023	3.86	3.12	5.69	301	18.56
MASSACHUSETTS						
WORCESTER	25027	R	R	R	R	R
MICHIGAN						
ALCONA	26001	3.73	3.11	5.72	239	18.39
ALGER	26003	3.79	3.12	5.71	287	18.52
ALLEGAN	26005	3.71	3.13	5.68	292	18.33
ALPENA	26007	3.80	3.12	5.69	270	18.52
ANTRIM	26009	3.77	3.07	5.76	228	18.36
ARENAC	26011	3.61	3.05	5.72	216	18.00

APPENDIX B

WEIGHTED AVERAGE COMPONENT TESTS BY STATE AND COUNTY, 2008

State/County	FIPS	Butterfat	Protein	Other Solids	SCC	Milk Component Value
		<i>percent</i>	<i>percent</i>	<i>percent</i>	<i>(000)</i>	<i>\$ per cwt.</i>
Michigan (cont.) BARAGA	26013	3.84	3.08	5.68	246	18.38
BARRY	26015	3.65	3.06	5.71	240	18.06
BAY	26017	3.79	3.08	5.67	296	18.28
BERRIEN	26021	3.46	3.04	5.70	271	17.59
BRANCH	26023	3.67	3.04	5.70	276	18.00
CALHOUN	26025	3.70	3.06	5.73	185	18.15
CASS	26027	3.93	3.20	5.69	316	19.05
CHARLEVOIX	26029	3.72	3.12	5.72	230	18.40
CHEBOYGAN	26031	3.67	3.02	5.64	372	17.83
CHIPPEWA	26033	3.80	3.06	5.68	267	18.28
CLARE	26035	3.69	3.07	5.70	312	18.10
CLINTON	26037	3.50	2.99	5.73	194	17.56
DELTA	26041	3.85	3.11	5.66	455	18.43
DICKINSON	26043	3.76	3.02	5.66	195	18.23
EATON	26045	3.82	3.07	5.67	299	18.31
EMMET	26047	3.64	3.02	5.66	274	17.84
GENESEE	26049	3.68	3.03	5.66	283	17.95
GLADWIN	26051	3.76	3.18	5.70	292	18.63
GRAND TRAVERSE	26055	3.76	3.09	5.69	326	18.24
GRATIOT	26057	3.60	3.01	5.69	195	17.79
HILLSDALE	26059	3.61	3.02	5.70	249	17.83
HOUGHTON	26061	R	R	R	R	R
HURON	26063	3.59	3.04	5.72	230	17.88
INGHAM	26065	3.68	3.04	5.72	254	18.00
IONIA	26067	3.64	3.06	5.72	208	18.07
IOSCO	26069	3.67	3.01	5.69	267	17.85
ISABELLA	26073	3.61	3.00	5.70	213	17.79
JACKSON	26075	3.64	3.04	5.69	283	17.94
KALAMAZOO	26077	3.74	3.09	5.73	136	18.41
KALKASKA	26079	R	R	R	R	R
KENT	26081	3.68	3.06	5.72	200	18.13
LAKE	26085	R	R	R	R	R
LAPEER	26087	3.71	3.04	5.68	303	18.03
LEELANAU	26089	3.78	3.11	5.65	346	18.43
LENAWEE	26091	3.62	3.10	5.73	257	18.21
LIVINGSTON	26093	3.62	3.00	5.73	260	17.76
MACKINAC	26097	3.79	3.09	5.72	303	18.32
MACOMB	26099	3.78	3.11	5.71	339	18.36
MANISTEE	26101	R	R	R	R	R
MARQUETTE	26103	3.71	3.10	5.62	318	18.20
MASON	26105	3.73	3.05	5.72	245	18.13
MECOSTA	26107	3.76	3.05	5.68	232	18.17
MENOMINEE	26109	3.69	3.03	5.69	301	18.08
MIDLAND	26111	R	R	R	R	R
MISSAUKEE	26113	3.66	3.03	5.71	170	17.98
MONROE	26115	3.94	3.25	5.67	344	19.09

APPENDIX B

WEIGHTED AVERAGE COMPONENT TESTS BY STATE AND COUNTY, 2008

State/County	FIPS	Butterfat	Protein	Other Solids	SCC	Milk Component Value
		<i>percent</i>	<i>percent</i>	<i>percent</i>	<i>(000)</i>	<i>\$ per cwt.</i>
Michigan (cont.)						
MONTCALM	26117	3.73	3.06	5.71	224	18.18
MONTMORENCY	26119	3.75	3.06	5.71	283	18.16
MUSKEGON	26121	3.76	3.03	5.70	254	18.06
NEWAYGO	26123	3.75	3.07	5.71	214	18.26
OAKLAND	26125	R	R	R	R	R
OCEANA	26127	3.79	3.07	5.69	285	18.27
OGEMAW	26129	3.68	3.03	5.71	205	18.03
ONTONAGON	26131	R	R	R	R	R
OSCEOLA	26133	3.69	3.02	5.69	231	17.99
OSCODA	26135	3.72	3.09	5.70	290	18.27
OTSEGO	26137	R	R	R	R	R
OTTAWA	26139	3.61	3.03	5.71	228	17.86
PRESQUE ISLE	26141	3.72	3.08	5.68	373	18.19
SAGINAW	26145	3.68	3.06	5.70	222	18.10
SANILAC	26151	3.59	3.02	5.70	253	17.77
SCHOOLCRAFT	26153	R	R	R	R	R
SHIAWASSEE	26155	3.62	3.01	5.72	238	17.82
ST. CLAIR	26147	3.64	3.04	5.68	353	17.87
ST. JOSEPH	26149	3.60	3.02	5.70	220	17.80
TUSCOLA	26157	3.57	3.02	5.72	253	17.68
VAN BUREN	26159	3.74	3.11	5.69	293	18.36
WASHTENAW	26161	3.70	3.04	5.69	275	18.03
WEXFORD	26165	3.82	3.07	5.75	176	18.38
MINNESOTA						
BECKER	27005	R	R	R	R	R
DAKOTA	27037	3.72	3.06	5.66	316	18.41
FARIBAULT	27043	R	R	R	R	R
FILLMORE	27045	R	R	R	R	R
HOUSTON	27055	3.86	3.12	5.70	358	19.05
MORRISON	27097	R	R	R	R	R
OLMSTED	27109	R	R	R	R	R
OTTER TAIL	27111	R	R	R	R	R
POPE	27121	R	R	R	R	R
STEARNS	27145	4.19	3.27	5.71	263	17.35
TODD	27153	4.28	3.26	5.62	267	17.44
WABASHA	27157	3.74	3.01	5.73	261	18.44
WINONA	27169	R	R	R	R	R
NEW YORK						
ALLEGANY	36003	3.90	3.17	5.58	334	18.57
CATTARAUGUS	36009	3.67	3.04	5.69	284	17.94
CHAUTAUQUA	36013	3.77	3.07	5.70	254	18.22
CORTLAND	36023	R	R	R	R	R

APPENDIX B

WEIGHTED AVERAGE COMPONENT TESTS BY STATE AND COUNTY, 2008

State/County	FIPS	Butterfat	Protein	Other Solids	SCC	Milk Component Value
		<i>percent</i>	<i>percent</i>	<i>percent</i>	<i>(000)</i>	<i>\$ per cwt.</i>
New York (cont.)						
ERIE	36029	3.66	3.02	5.78	188	17.91
GENESEE	36037	3.66	3.08	5.71	219	17.99
LIVINGSTON	36051	3.59	3.02	5.70	248	17.49
MADISON	36053	R	R	R	R	R
MONROE	36055	R	R	R	R	R
ONTARIO	36069	3.61	3.09	5.69	279	17.65
ORLEANS	36073	R	R	R	R	R
SCHOHARIE	36095	R	R	R	R	R
STEUBEN	36101	3.79	3.04	5.70	198	17.13
SUFFOLK	36103	R	R	R	R	R
TOMPKINS	36109	3.65	3.00	5.72	264	19.50
WAYNE	36117	R	R	R	R	R
WYOMING	36121	3.70	3.03	5.70	200	17.87
YATES	36123	3.78	2.96	5.67	247	16.99
NORTH CAROLINA						
ALAMANCE	37001	R	R	R	R	R
IREDELL	37097	R	R	R	R	R
OHIO						
ADAMS	39001	4.04	3.23	5.62	347	19.61
ALLEN	39003	3.60	2.95	5.67	284	17.53
ASHLAND	39005	3.68	3.06	5.69	264	18.05
ASHTABULA	39007	3.78	3.06	5.69	265	18.22
ATHENS	39009	3.73	3.11	5.62	410	18.25
AUGLAIZE	39011	3.78	3.07	5.65	271	18.21
BELMONT	39013	3.88	3.11	5.61	335	18.56
BROWN	39015	4.07	3.26	5.63	358	20.14
BUTLER	39017	3.86	3.12	5.64	404	18.43
CARROLL	39019	3.83	3.08	5.64	276	18.37
CHAMPAIGN	39021	4.01	3.26	5.68	272	19.34
CLARK	39023	3.62	3.10	5.73	246	18.14
CLERMONT	39025	5.18	3.86	5.59	289	23.77
CLINTON	39027	4.03	3.24	5.58	403	19.23
COLUMBIANA	39029	3.94	3.14	5.67	260	18.76
COSHOCOTON	39031	3.96	3.20	5.66	322	18.95
CRAWFORD	39033	3.65	3.09	5.68	328	17.96
DARKE	39037	3.74	3.08	5.69	255	18.25
DEFIANCE	39039	3.65	3.09	5.70	241	18.11
DELAWARE	39041	3.83	3.24	5.66	426	18.87
ERIE	39043	R	R	R	R	R
FAIRFIELD	39045	3.92	3.22	5.67	381	18.92
FAYETTE	39047	4.31	3.35	5.73	242	21.11
FRANKLIN	39049	R	R	R	R	R

APPENDIX B

WEIGHTED AVERAGE COMPONENT TESTS BY STATE AND COUNTY, 2008

State/County	FIPS	Butterfat	Protein	Other Solids	SCC	Milk Component Value
		<i>percent</i>	<i>percent</i>	<i>percent</i>	<i>(000)</i>	<i>\$ per cwt.</i>
Ohio (cont.) FULTON	39051	3.60	3.09	5.70	294	18.25
GALLIA	39053	3.92	3.18	5.68	520	18.66
GEAUGA	39055	3.76	3.06	5.68	272	18.16
GREENE	39057	3.91	3.10	5.64	278	18.57
GUERNSEY	39059	4.05	3.22	5.68	297	19.17
HAMILTON	39061	R	R	R	R	R
HANCOCK	39063	3.96	3.21	5.70	299	19.03
HARDIN	39065	3.53	3.10	5.77	248	17.89
HARRISON	39067	3.80	3.13	5.66	395	18.42
HENRY	39069	3.65	3.01	5.68	299	17.74
HIGHLAND	39071	4.27	3.39	5.65	339	20.46
HOCKING	39073	R	R	R	R	R
HOLMES	39075	3.95	3.19	5.67	272	18.94
HURON	39077	3.84	3.10	5.69	288	18.44
JACKSON	39079	3.77	3.14	5.61	443	18.38
JEFFERSON	39081	3.78	3.05	5.62	317	18.13
KNOX	39083	3.69	3.08	5.70	282	18.17
LAKE	39085	R	R	R	R	R
LAWRENCE	39087	3.81	3.21	5.71	517	18.76
LICKING	39089	3.90	3.17	5.69	338	18.75
LOGAN	39091	3.84	3.09	5.70	294	18.43
LORAIN	39093	3.69	3.04	5.70	314	17.93
MADISON	39097	3.64	3.07	5.75	269	17.91
MAHONING	39099	3.79	3.08	5.66	254	18.30
MARION	39101	3.70	3.10	5.74	267	18.24
MEDINA	39103	3.74	3.06	5.71	260	18.17
MEIGS	39105	3.69	3.11	5.63	349	18.24
MERCER	39107	3.71	3.04	5.68	265	18.07
MIAMI	39109	3.78	3.09	5.66	276	18.37
MONROE	39111	3.87	3.12	5.59	352	18.56
MONTGOMERY	39113	3.96	3.09	5.62	223	18.72
MORGAN	39115	3.69	3.06	5.66	292	18.12
MORROW	39117	3.83	3.16	5.69	289	18.65
MUSKINGUM	39119	3.81	3.17	5.69	321	18.57
NOBLE	39121	3.71	2.99	5.51	352	17.74
OTTAWA	39123	R	R	R	R	R
PAULDING	39125	3.60	3.07	5.71	238	18.16
PERRY	39127	3.81	3.22	5.70	392	18.73
PICKAWAY	39129	3.66	3.10	5.73	299	18.12
PIKE	39131	3.89	3.23	5.67	493	18.84
PORTAGE	39133	3.70	3.01	5.65	279	17.88
PREBLE	39135	3.84	3.13	5.69	254	18.65
PUTNAM	39137	3.61	3.11	5.71	299	18.09
RICHLAND	39139	3.73	3.04	5.69	289	18.05
ROSS	39141	3.87	3.15	5.58	396	18.81
SANDUSKY	39143	3.85	3.18	5.65	415	18.72

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WEIGHTED AVERAGE COMPONENT TESTS BY STATE AND COUNTY, 2008

State/County	FIPS	Butterfat	Protein	Other Solids	SCC	Milk Component Value
		<i>percent</i>	<i>percent</i>	<i>percent</i>	<i>(000)</i>	<i>\$ per cwt.</i>
Ohio (cont.)						
SCIOTO	39145	3.71	3.10	5.69	319	18.23
SENECA	39147	3.80	3.14	5.68	388	18.42
SHELBY	39149	3.76	3.05	5.69	295	18.03
STARK	39151	3.76	3.03	5.66	246	18.08
SUMMIT	39153	R	R	R	R	R
TRUMBULL	39155	3.81	3.02	5.69	224	18.17
TUSCARAWAS	39157	3.74	3.02	5.67	244	18.03
UNION	39159	3.86	3.14	5.68	281	18.70
VAN WERT	39161	3.73	3.08	5.70	260	18.07
VINTON	39163	R	R	R	R	R
WARREN	39165	R	R	R	R	R
WASHINGTON	39167	3.79	3.13	5.63	364	18.43
WAYNE	39169	3.78	3.07	5.70	261	18.30
WILLIAMS	39171	3.60	3.02	5.72	263	17.99
WOOD	39173	3.58	3.10	5.76	264	18.06
WYANDOT	39175	3.78	3.08	5.66	280	18.32
PENNSYLVANIA						
ADAMS	42001	R	R	R	R	R
ALLEGHENY	42003	3.82	3.14	5.67	315	18.55
ARMSTRONG	42005	3.87	3.11	5.65	346	18.49
BEAVER	42007	3.90	3.11	5.64	322	18.54
BEDFORD	42009	3.73	3.01	5.71	310	17.94
BLAIR	42013	3.73	3.06	5.74	213	17.52
BRADFORD	42015	4.32	3.34	5.54	276	19.68
BUTLER	42019	3.81	3.08	5.66	371	18.07
CAMBRIA	42021	3.64	3.06	5.70	336	17.94
CAMERON	42023	R	R	R	R	R
CENTRE	42027	3.73	3.04	5.69	303	17.55
CHESTER	42029	3.72	3.09	5.74	142	19.12
CLARION	42031	3.79	3.11	5.70	360	18.34
CLEARFIELD	42033	3.73	3.09	5.67	368	18.19
CLINTON	42035	3.70	3.06	5.68	318	17.54
CRAWFORD	42039	3.78	3.05	5.67	315	18.13
CUMBERLAND	42041	R	R	R	R	R
DAUPHIN	42043	3.56	2.98	5.79	276	19.29
ELK	42047	3.87	3.07	5.70	373	18.30
ERIE	42049	3.80	3.07	5.66	332	18.26
FAYETTE	42051	3.74	3.09	5.67	375	18.19
FOREST	42053	3.86	3.11	5.69	253	18.54
FRANKLIN	42055	3.90	3.12	5.71	591	18.34
FULTON	42057	R	R	R	R	R
GREENE	42059	3.58	3.05	5.64	371	17.84
HUNTINGDON	42061	3.70	3.06	5.70	312	17.08
INDIANA	42063	3.75	3.08	5.69	345	18.21

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WEIGHTED AVERAGE COMPONENT TESTS BY STATE AND COUNTY, 2008

State/County	FIPS	Butterfat <i>percent</i>	Protein <i>percent</i>	Other Solids <i>percent</i>	SCC <i>(000)</i>	Milk Component Value <i>\$ per cwt.</i>
ILLINOIS						
CARROLL	17015	3.80	3.11	5.73	290	18.62
CHAMPAIGN	17019	R	R	R	R	R
GRUNDY	17063	R	R	R	R	R
IROQUOIS	17075	3.76	3.05	5.67	252	17.90
JO DAVIESS	17085	3.65	3.00	5.72	299	18.46
KANE	17089	R	R	R	R	R
KANKAKEE	17091	3.77	3.12	5.55	410	18.15
OGLE	17141	R	R	R	R	R
ROCK ISLAND	17161	R	R	R	R	R
STEPHENSON	17177	3.63	2.98	5.77	226	17.46
VERMILION	17183	R	R	R	R	R
WHITESIDE	17195	R	R	R	R	R
WILL	17197	3.66	3.07	5.67	405	17.97
WINNEBAGO	17201	R	R	R	R	R
INDIANA						
ADAMS	18001	3.74	3.08	5.70	299	18.14
ALLEN	18003	3.74	3.08	5.69	301	18.22
BARTHOLOMEW	18005	3.74	3.13	5.70	268	18.57
BENTON	18007	R	R	R	R	R
BOONE	18011	3.88	3.12	5.65	254	18.61
CARROLL	18015	R	R	R	R	R
CASS	18017	3.62	3.06	5.73	271	17.76
CLAY	18021	3.94	3.21	5.67	410	20.19
CLINTON	18023	R	R	R	R	R
DAVIESS	18027	R	R	R	R	R
DE KALB	18033	3.60	3.03	5.68	334	17.98
DEARBORN	18029	R	R	R	R	R
DECATUR	18031	4.10	3.24	5.66	279	19.41
DELAWARE	18035	3.70	3.04	5.62	398	17.98
ELKHART	18039	3.76	3.01	5.67	285	18.01
FAYETTE	18041	3.79	3.00	5.68	299	17.96
FOUNTAIN	18045	R	R	R	R	R
FRANKLIN	18047	3.76	3.06	5.70	326	18.02
FULTON	18049	3.68	2.98	5.64	314	17.69
GRANT	18053	3.96	3.16	5.68	259	18.93
GREENE	18055	R	R	R	R	R
HAMILTON	18057	R	R	R	R	R
HANCOCK	18059	3.89	3.08	5.54	513	18.39
HENDRICKS	18063	4.39	3.40	5.67	277	20.48
HENRY	18065	3.64	3.07	5.72	344	18.02
HOWARD	18067	3.85	3.09	5.69	288	18.36
HUNTINGTON	18069	3.67	3.09	5.72	318	18.20
JACKSON	18071	3.98	3.24	5.69	312	19.20

APPENDIX B

WEIGHTED AVERAGE COMPONENT TESTS BY STATE AND COUNTY, 2008

State/County	FIPS	Butterfat	Protein	Other Solids	SCC	Milk Component Value
		<i>percent</i>	<i>percent</i>	<i>percent</i>	<i>(000)</i>	<i>\$ per cwt.</i>
Penn (cont.)						
JEFFERSON	42065	3.90	3.18	5.66	400	18.73
JUNIATA	42067	3.87	3.07	5.71	310	17.05
LANCASTER	42071	3.60	2.95	5.75	248	17.67
LAWRENCE	42073	3.91	3.14	5.66	332	18.64
LEBANON	42075	3.62	2.94	5.74	248	20.31
LYCOMING	42081	R	R	R	R	R
MCKEAN	42083	R	R	R	R	R
MERCER	42085	3.96	3.16	5.66	309	18.84
MIFFLIN	42087	3.98	3.23	5.67	245	17.05
NORTHUMBERLAND	42097	R	R	R	R	R
PERRY	42099	4.06	3.20	5.72	273	18.39
POTTER	42105	R	R	R	R	R
SCHUYLKILL	42107	3.87	3.09	5.70	321	17.34
SNYDER	42109	3.68	2.93	5.45	300	17.24
SOMERSET	42111	3.79	3.08	5.66	322	18.28
TIOGA	42117	R	R	R	R	R
UNION	42119	3.88	3.13	5.65	361	16.88
VENANGO	42121	3.72	3.06	5.65	359	17.95
WARREN	42123	3.79	3.10	5.66	299	18.38
WASHINGTON	42125	3.76	3.06	5.64	339	18.13
WESTMORELAND	42129	3.79	3.10	5.66	370	18.31
WYOMING	42131	R	R	R	R	R
TENNESSEE						
LOUDON	47105	R	R	R	R	R
POLK	47139	R	R	R	R	R
VERMONT						
ADDISON	50001	R	R	R	R	R
FRANKLIN	50011	R	R	R	R	R
RUTLAND	50021	R	R	R	R	R
VIRGINIA						
FRANKLIN	51067	R	R	R	R	R
PITTSYLVANIA	51143	3.70	3.40	5.86	171	20.67
ROCKINGHAM	51165	R	R	R	R	R
SMYTH	51173	R	R	R	R	R
WASHINGTON	51191	R	R	R	R	R
WEST VIRGINIA						
BARBOUR	54001	3.82	3.01	5.59	242	18.20
BROOKE	54009	3.79	3.15	5.64	415	18.74

APPENDIX B

WEIGHTED AVERAGE COMPONENT TESTS BY STATE AND COUNTY, 2008

State/County	FIPS	Butterfat	Protein	Other Solids	SCC	Milk Component Value
		<i>percent</i>	<i>percent</i>	<i>percent</i>	<i>(000)</i>	<i>\$ per cwt.</i>
WV (cont.) GRANT	54023	R	R	R	R	R
GREENBRIER	54025	R	R	R	R	R
HARDY	54031	R	R	R	R	R
HARRISON	54033	R	R	R	R	R
JACKSON	54035	3.84	3.24	5.71	365	19.00
LEWIS	54041	R	R	R	R	R
MARSHALL	54051	3.68	3.06	5.52	474	17.99
MASON	54053	4.06	3.24	5.69	380	19.26
MONONGALIA	54061	3.77	3.09	5.66	222	18.37
OHIO	54069	3.83	3.11	5.58	365	18.40
PRESTON	54077	3.82	3.19	5.69	350	18.74
RANDOLPH	54083	R	R	R	R	R
ROANE	54087	R	R	R	R	R
TAYLOR	54091	4.09	3.30	5.65	484	19.55
WETZEL	54103	R	R	R	R	R
WIRT	54105	R	R	R	R	R
WOOD	54107	R	R	R	R	R
WISCONSIN						
ADAMS	55001	R	R	R	R	R
BROWN	55009	3.86	3.06	5.73	249	18.44
BUFFALO	55011	R	R	R	R	R
CALUMET	55015	3.75	2.92	5.73	176	17.83
CHIPPEWA	55017	R	R	R	R	R
CLARK	55019	3.68	3.00	5.73	324	17.82
COLUMBIA	55021	3.67	3.03	5.75	241	18.51
CRAWFORD	55023	3.78	3.05	5.72	274	19.03
DANE	55025	3.68	2.98	5.75	249	17.81
DODGE	55027	3.74	3.04	5.73	252	18.45
DOOR	55029	4.01	3.09	5.62	380	18.84
DUNN	55033	R	R	R	R	R
FLORENCE	55037	R	R	R	R	R
FOND DU LAC	55039	3.72	3.00	5.71	226	18.53
GRANT	55043	3.75	3.06	5.68	295	18.77
GREEN	55045	3.77	3.07	5.76	304	18.27
GREEN LAKE	55047	3.57	2.97	5.72	243	18.34
IOWA	55049	3.76	3.02	5.73	258	18.06
JACKSON	55053	R	R	R	R	R
JEFFERSON	55055	3.81	3.04	5.72	234	18.67
JUNEAU	55057	3.72	3.03	5.75	239	18.08
KENOSHA	55059	R	R	R	R	R
KEWAUNEE	55061	3.68	2.91	5.61	231	17.86
LA CROSSE	55063	3.84	3.09	5.66	451	18.62
LAFAYETTE	55065	3.81	3.15	5.71	295	19.10
LANGLADE	55067	3.82	2.91	5.75	233	17.74

APPENDIX B

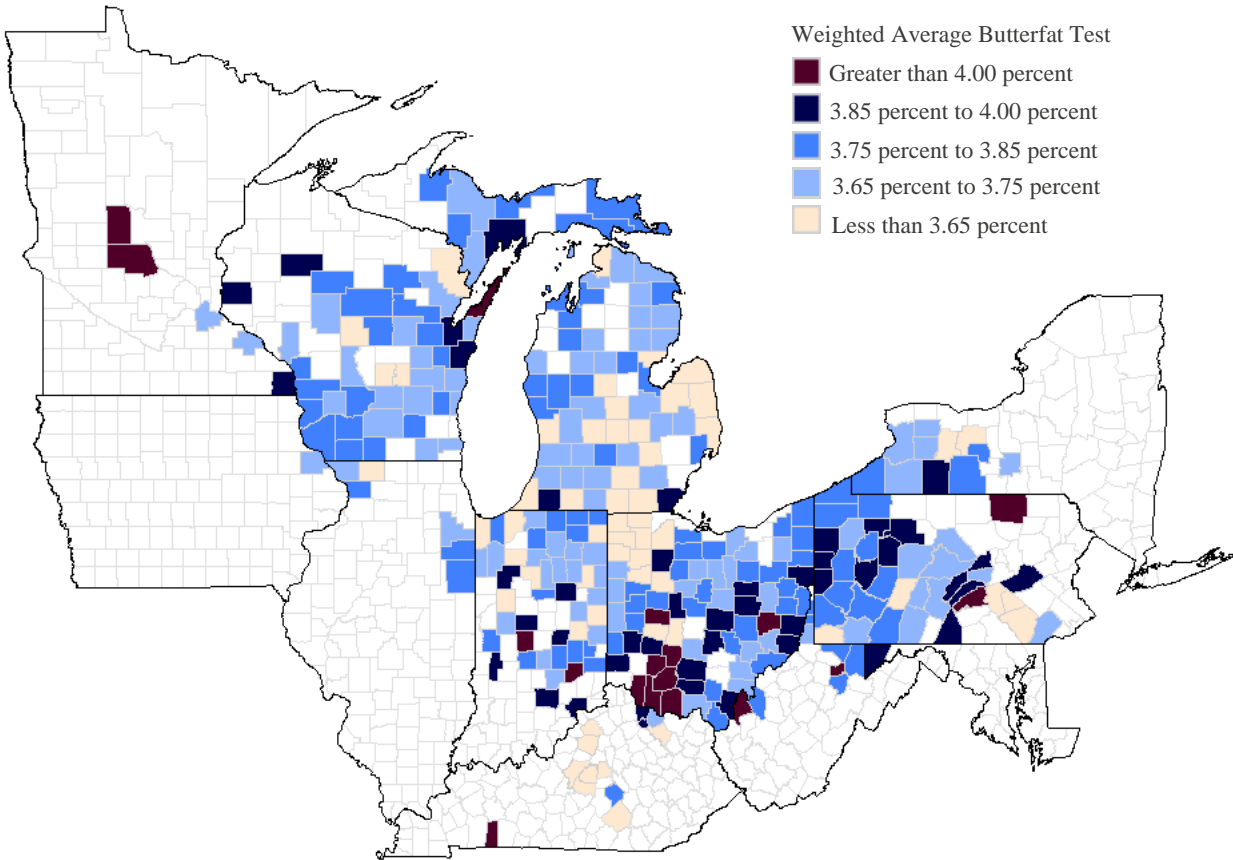
WEIGHTED AVERAGE COMPONENT TESTS BY STATE AND COUNTY, 2008

State/County	FIPS	Butterfat	Protein	Other Solids	SCC	Milk Component Value
		<i>percent</i>	<i>percent</i>	<i>percent</i>	<i>(000)</i>	<i>\$ per cwt.</i>
Wisconsin (cont.) LINCOLN	55069	R	R	R	R	R
MANITOWOC	55071	3.96	3.06	5.64	305	18.45
MARATHON	55073	3.80	3.03	5.79	210	18.14
MARINETTE	55075	3.60	2.93	5.72	238	17.46
MARQUETTE	55077	3.53	2.97	5.75	298	18.28
MONROE	55081	R	R	R	R	R
OCONTO	55083	3.74	3.07	5.70	305	18.60
OUTAGAMIE	55087	3.76	3.03	5.76	187	18.13
OZAUKEE	55089	3.71	2.97	5.68	195	18.45
PEPIN	55091	R	R	R	R	R
PIERCE	55093	R	R	R	R	R
POLK	55095	R	R	R	R	R
PORTAGE	55097	3.78	3.01	5.63	272	18.22
PRICE	55099	R	R	R	R	R
RACINE	55101	3.67	2.98	5.77	299	17.10
RICHLAND	55103	3.65	3.00	5.73	271	17.72
RUSK	55107	3.95	2.97	5.60	269	18.00
SAUK	55111	3.76	3.02	5.74	278	18.18
SHAWANO	55115	3.80	3.01	5.71	205	18.13
SHEBOYGAN	55117	3.69	2.95	5.62	225	18.32
ST. CROIX	55109	4.00	3.08	5.60	322	17.49
TAYLOR	55119	3.76	3.16	5.64	502	19.06
TREMPEALEAU	55121	3.66	2.93	5.75	214	17.83
VERNON	55123	3.76	3.04	5.77	249	18.24
WALWORTH	55127	3.71	3.10	5.73	330	17.33
WASHINGTON	55131	3.82	3.03	5.69	201	18.57
WAUKESHA	55133	R	R	R	R	R
WAUPACA	55135	3.73	3.06	5.73	260	18.23
WAUSHARA	55137	R	R	R	R	R
WINNEBAGO	55139	3.73	3.00	5.77	305	18.03
WOOD	55141	3.60	3.00	5.77	305	17.15

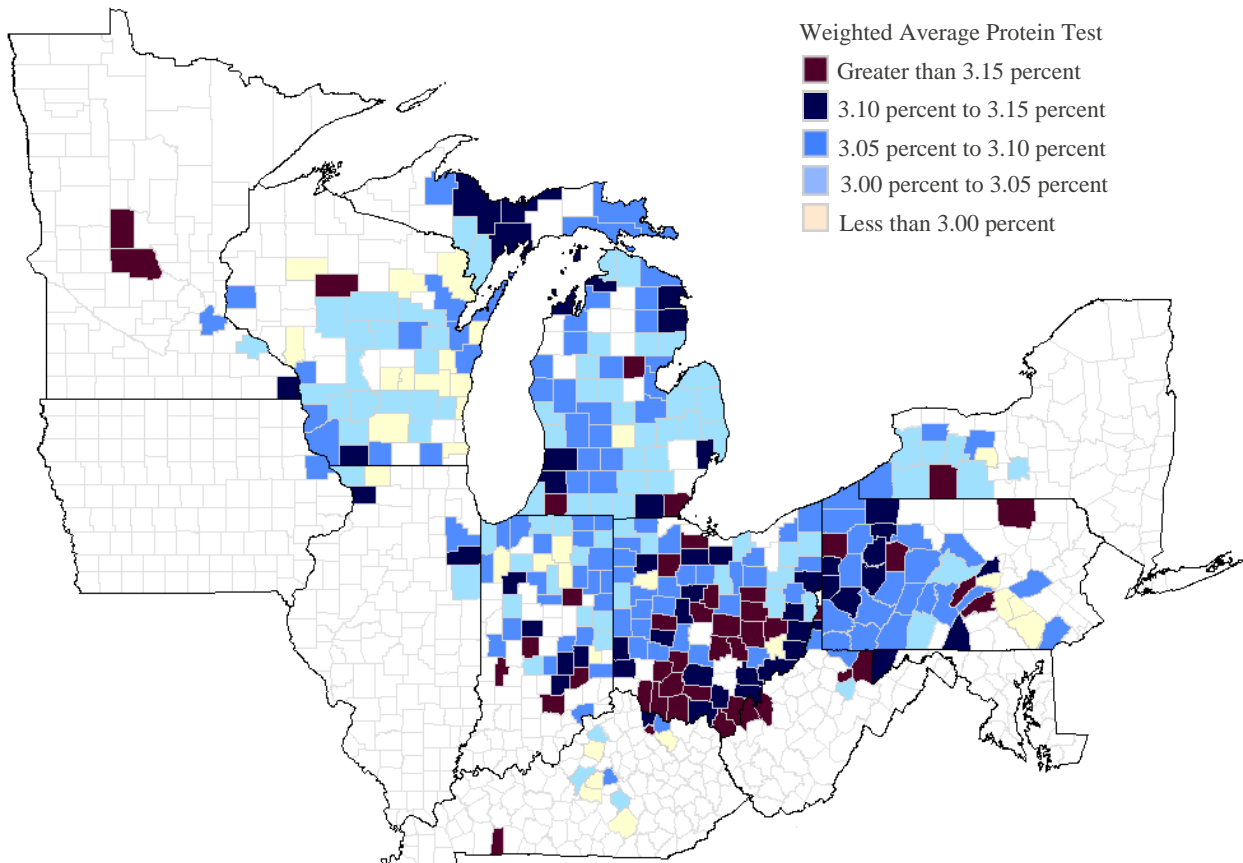
APPENDIX C

THEMATIC MAPS DISPLAYING WEIGHTED AVERAGE COMPONENT TESTS BY STATE AND COUNTY, 2008 1/

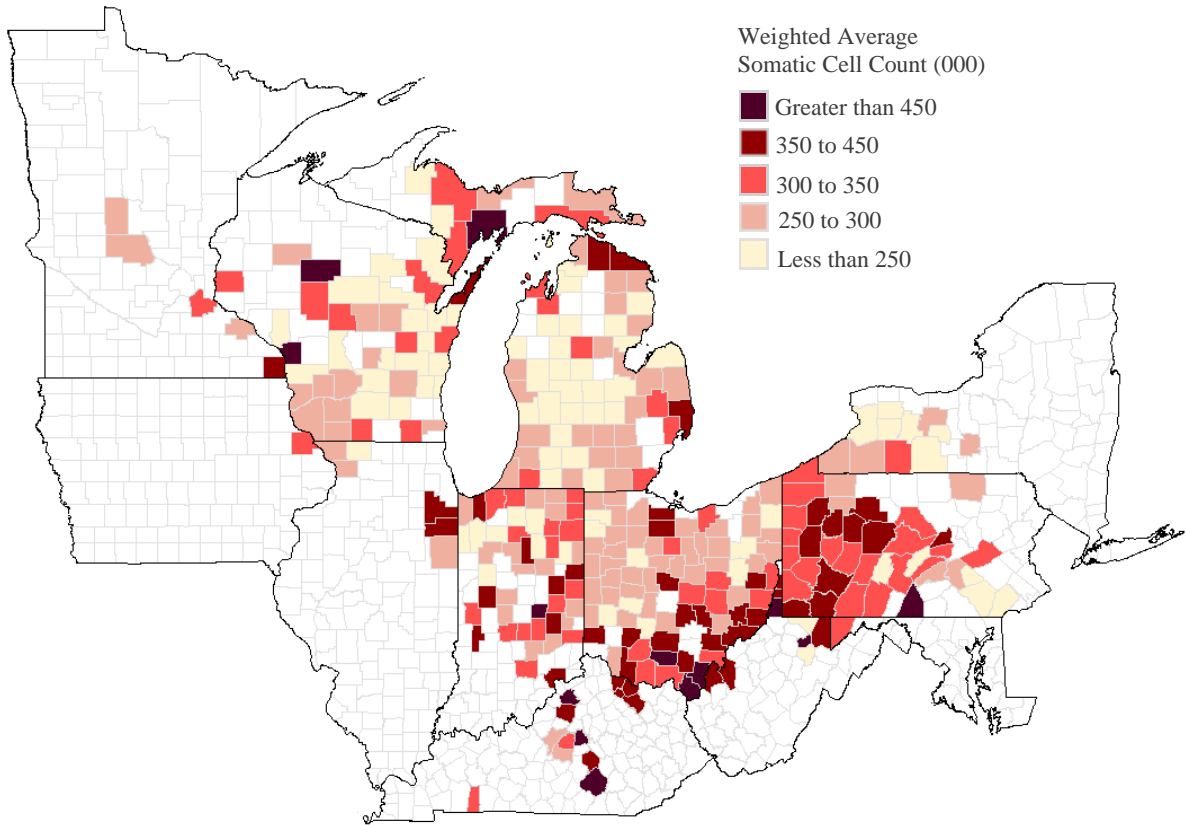
WEIGHTED AVERAGE BUTTERFAT TEST BY STATE AND COUNTY, 2008



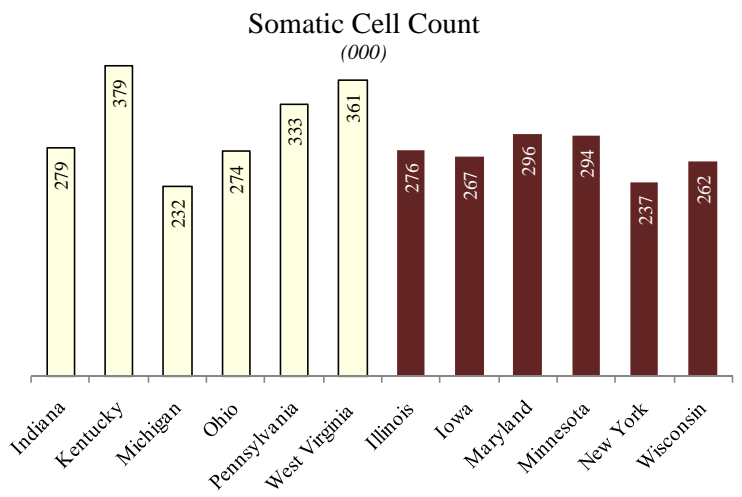
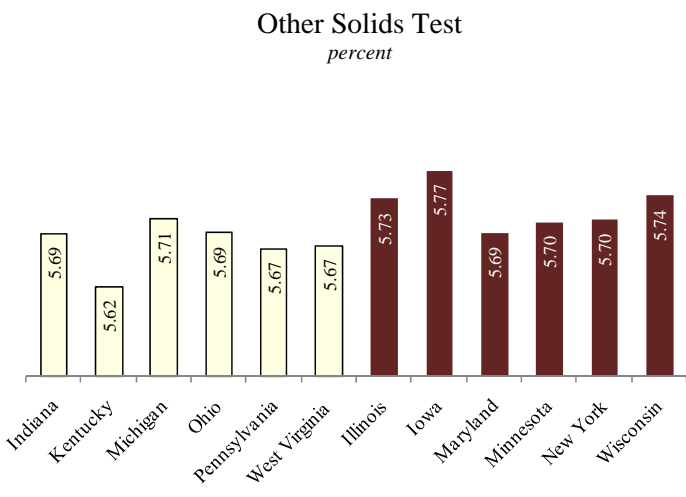
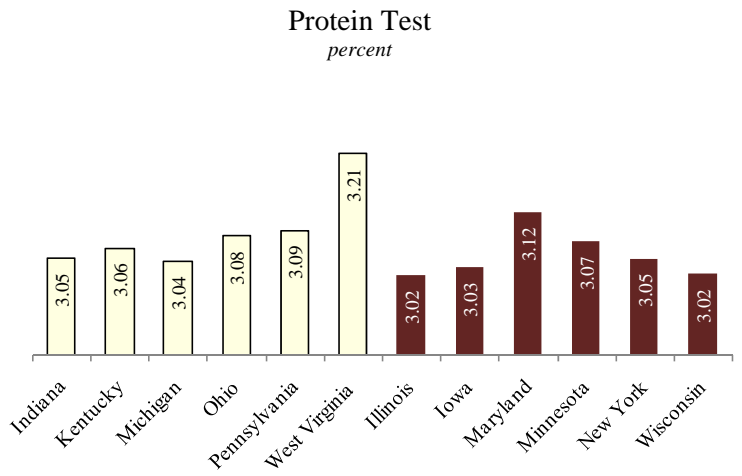
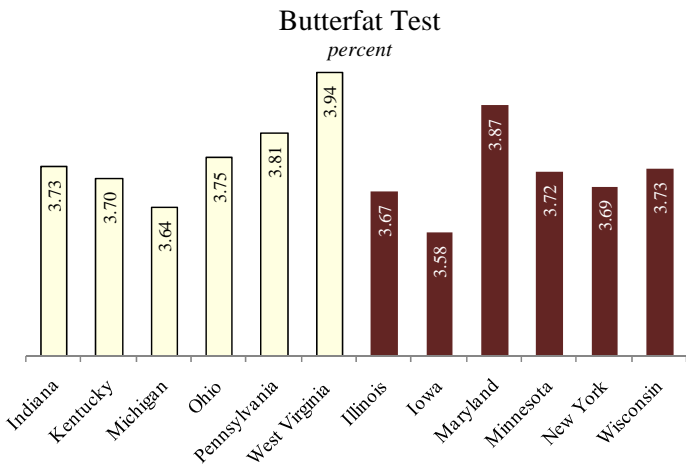
WEIGHTED AVERAGE PROTEIN TEST BY STATE AND COUNTY, 2008



WEIGHTED AVERAGE SOMATIC CELL COUNT BY STATE AND COUNTY, 2008



WEIGHTED AVERAGE COMPONENT TESTS BY STATE, 2008 ^{2/}



1/ For producers associated with the Mideast Marketing Area, excludes restricted data.

2/ Yellow denotes states associated with the Mideast Marketing Area.

APPENDIX D

EVIIEWS OUTPUT FOR COMPONENT MODELS

Pooled Model

$$bf_{it} = \beta_0 + \beta_1 pr_{it} + \beta_2 (pr \times os)_{it} + \beta_3 p_{it} + \varepsilon_{it}$$

Dependent Variable: BF

Method: Panel Least Squares

Date: 10/08/09 Time: 13:29

Sample: 1 12

Periods included: 12

Cross-sections included: 6255

Total panel (balanced) observations: 75060

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.132644	0.012780	-10.37877	0.0000
PR	1.661931	0.014680	113.2142	0.0000
PR*OS	-0.066762	0.002504	-26.66077	0.0000
P	-7.16E-08	2.44E-09	-29.37104	0.0000
R-squared	0.579178	Mean dependent var		3.834373
Adjusted R-squared	0.579161	S.D. dependent var		0.338464
S.E. of regression	0.219569	Akaike info criterion		-0.194249
Sum squared resid	3618.486	Schwarz criterion		-0.193757
Log likelihood	7294.147	Hannan-Quinn criter.		-0.194097
F-statistic	34433.24	Durbin-Watson stat		0.424540
Prob(F-statistic)	0.000000			

APPENDIX D

EIEWS OUTPUT FOR COMPONENT MODELS

Random Entity Effect Model

$$bf_{it} = \beta_0 + \beta_1 pr_{it} + \beta_2 (pr \times os)_{it} + \beta_3 p_{it} + \varepsilon_{it}$$

Dependent Variable: BF

Method: Panel EGLS (Cross-section random effects)

Date: 10/08/09 Time: 13:30

Sample: 1 12

Periods included: 12

Cross-sections included: 6255

Total panel (balanced) observations: 75060

Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.326723	0.014087	23.19250	0.0000
PR	1.557395	0.017308	89.98068	0.0000
PR*OS	-0.074425	0.003081	-24.15983	0.0000
P	-8.06E-08	5.56E-09	-14.50822	0.0000

Effects Specification

	S.D.	Rho
Cross-section random	0.155938	0.5118
Idiosyncratic random	0.152313	0.4882

Weighted Statistics

R-squared	0.479973	Mean dependent var	1.040584
Adjusted R-squared	0.479952	S.D. dependent var	0.211791
S.E. of regression	0.152731	Sum squared resid	1750.824
F-statistic	23091.66	Durbin-Watson stat	0.824315
Prob(F-statistic)	0.000000		

Unweighted Statistics

R-squared	0.571862	Mean dependent var	3.834373
Sum squared resid	3681.393	Durbin-Watson stat	0.392034

APPENDIX D

EViews OUTPUT FOR COMPONENT MODELS

Fixed Time Effect Model

$$bf_{it} = \beta_0 + \beta_1 pr_{it} + \beta_2 (pr \times os)_{it} + \beta_3 p_{it} + \varepsilon_{it}$$

Dependent Variable: BF

Method: Panel Least Squares

Date: 10/08/09 Time: 13:30

Sample: 1 12

Periods included: 12

Cross-sections included: 6255

Total panel (balanced) observations: 75060

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.095268	0.013724	6.941711	0.0000
PR	1.581789	0.014887	106.2526	0.0000
PR*OS	-0.065561	0.002489	-26.33813	0.0000
P	-7.60E-08	2.38E-09	-31.97218	0.0000

Effects Specification

Period fixed (dummy variables)

R-squared	0.602000	Mean dependent var	3.834373
Adjusted R-squared	0.601926	S.D. dependent var	0.338464
S.E. of regression	0.213548	Akaike info criterion	-0.249714
Sum squared resid	3422.247	Schwarz criterion	-0.247870
Log likelihood	9386.752	Hannan-Quinn criter.	-0.249147
F-statistic	8107.883	Durbin-Watson stat	0.397593
Prob(F-statistic)	0.000000		

APPENDIX D

EVIIEWS OUTPUT FOR COMPONENT MODELS

Random Entity and Fixed Time Effect Model

$$bf_{it} = \beta_0 + \beta_1 pr_{it} + \beta_2 (pr \times os)_{it} + \beta_3 p_{it} + \varepsilon_{it}$$

Dependent Variable: BF

Method: Panel EGLS (Cross-section random effects)

Date: 10/08/09 Time: 13:30

Sample: 1 12

Periods included: 12

Cross-sections included: 6255

Total panel (balanced) observations: 75060

Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.564272	0.016326	95.81220	0.0000
PR	1.147888	0.017003	67.51079	0.0000
PR*OS	-0.072404	0.002906	-24.91403	0.0000
P	-1.09E-07	5.40E-09	-20.15955	0.0000
Effects Specification				
			S.D.	Rho
Cross-section random			0.157444	0.5857
Period fixed (dummy variables)				
Idiosyncratic random			0.132415	0.4143
Weighted Statistics				
R-squared	0.581454	Mean dependent var	3.834373	
Adjusted R-squared	0.581376	S.D. dependent var	0.208571	
S.E. of regression	0.134948	Sum squared resid	1366.644	
F-statistic	7446.724	Durbin-Watson stat	0.832008	
Prob(F-statistic)	0.000000			
Unweighted Statistics				
R-squared	0.540771	Mean dependent var	3.834373	
Sum squared resid	3948.734	Durbin-Watson stat	0.287955	

APPENDIX D

EViews OUTPUT FOR COMPONENT MODELS

Pooled Model

$$pr_{it} = \beta_0 + \beta_1 bf_{it} + \beta_2 (bf \times os)_{it} + \beta_3 p_{it} + \varepsilon_{it}$$

Dependent Variable: PR

Method: Panel Least Squares

Date: 10/08/09 Time: 13:33

Sample: 1 12

Periods included: 12

Cross-sections included: 6255

Total panel (balanced) observations: 75060

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.405613	0.005457	257.5607	0.0000
BF	0.321027	0.006704	47.88323	0.0000
BF*OS	0.021202	0.001179	17.98270	0.0000
P	7.62E-09	1.43E-09	5.311641	0.0000
R-squared	0.570507	Mean dependent var		3.097136
Adjusted R-squared	0.570490	S.D. dependent var		0.196218
S.E. of regression	0.128595	Akaike info criterion		-1.264239
Sum squared resid	1241.183	Schwarz criterion		-1.263747
Log likelihood	47450.89	Hannan-Quinn criter.		-1.264088
F-statistic	33233.02	Durbin-Watson stat		0.442760
Prob(F-statistic)	0.000000			

APPENDIX D

EViews OUTPUT FOR COMPONENT MODELS

Random Entity Effect Model

$$pr_{it} = \beta_0 + \beta_1 bf_{it} + \beta_2 (bf \times os)_{it} + \beta_3 p_{it} + \varepsilon_{it}$$

Dependent Variable: PR

Method: Panel EGLS (Cross-section random effects)

Date: 10/08/09 Time: 13:33

Sample: 1 12

Periods included: 12

Cross-sections included: 6255

Total panel (balanced) observations: 75060

Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.538730	0.006282	244.9252	0.0000
BF	0.503509	0.008221	61.24332	0.0000
BF*OS	-0.017192	0.001476	-11.64780	0.0000
P	1.34E-09	3.23E-09	0.415929	0.6775

Effects Specification

	S.D.	Rho
Cross-section random	0.089451	0.4903
Idiosyncratic random	0.091211	0.5097

Weighted Statistics

R-squared	0.476272	Mean dependent var	0.874556
Adjusted R-squared	0.476252	S.D. dependent var	0.126477
S.E. of regression	0.091532	Sum squared resid	628.8250
F-statistic	22751.72	Durbin-Watson stat	0.855963
Prob(F-statistic)	0.000000		

Unweighted Statistics

R-squared	0.561367	Mean dependent var	3.097136
Sum squared resid	1267.599	Durbin-Watson stat	0.424623

APPENDIX D

EViews OUTPUT FOR COMPONENT MODELS

Fixed Time Effect Model

$$pr_{it} = \beta_0 + \beta_1 bf_{it} + \beta_2 (bf \times os)_{it} + \beta_3 p_{it} + \varepsilon_{it}$$

Dependent Variable: PR

Method: Panel Least Squares

Date: 10/08/09 Time: 13:34

Sample: 1 12

Periods included: 12

Cross-sections included: 6255

Total panel (balanced) observations: 75060

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.509087	0.005836	258.5939	0.0000
BF	0.243787	0.006697	36.40417	0.0000
BF*OS	0.030139	0.001167	25.83624	0.0000
P	1.92E-09	1.40E-09	1.376972	0.1685

Effects Specification

Period fixed (dummy variables)

R-squared	0.595353	Mean dependent var	3.097136
Adjusted R-squared	0.595278	S.D. dependent var	0.196218
S.E. of regression	0.124830	Akaike info criterion	-1.323536
Sum squared resid	1169.382	Schwarz criterion	-1.321692
Log likelihood	49687.30	Hannan-Quinn criter.	-1.322969
F-statistic	7886.645	Durbin-Watson stat	0.400422
Prob(F-statistic)	0.000000		

APPENDIX D

EVIIEWS OUTPUT FOR COMPONENT MODELS

Random Entity and Fixed Time Effect Model

$$pr_{it} = \beta_0 + \beta_1 bf_{it} + \beta_2 (bf \times os)_{it} + \beta_3 p_{it} + \varepsilon_{it}$$

Dependent Variable: PR

Method: Panel EGLS (Cross-section random effects)

Date: 10/08/09 Time: 13:34

Sample: 1 12

Periods included: 12

Cross-sections included: 6255

Total panel (balanced) observations: 75060

Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.027147	0.007539	268.8805	0.0000
BF	0.261676	0.008105	32.28637	0.0000
BF*OS	0.003240	0.001428	2.268348	0.0233
P	-2.17E-08	3.17E-09	-6.859077	0.0000

Effects Specification

	S.D.	Rho
Cross-section random	0.090218	0.5498
Period fixed (dummy variables)		
Idiosyncratic random	0.081645	0.4502

Weighted Statistics

R-squared	0.560188	Mean dependent var	3.097136
Adjusted R-squared	0.560106	S.D. dependent var	0.124935
S.E. of regression	0.082863	Sum squared resid	515.2753
F-statistic	6827.481	Durbin-Watson stat	0.784922
Prob(F-statistic)	0.000000		

Unweighted Statistics

R-squared	0.550416	Mean dependent var	3.097136
Sum squared resid	1299.244	Durbin-Watson stat	0.311297

APPENDIX D

EViews OUTPUT FOR COMPONENT MODELS

Pooled Model

$$os_{it} = \beta_0 + \beta_1 bf_{it} + \beta_2 (bf \times pr)_{it} + \beta_3 p_{it} + \varepsilon_{it}$$

Dependent Variable: OS

Method: Panel Least Squares

Date: 10/08/09 Time: 13:34

Sample: 1 12

Periods included: 12

Cross-sections included: 6255

Total panel (balanced) observations: 75060

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5.787328	0.006731	859.8475	0.0000
BF	-0.070942	0.003714	-19.10215	0.0000
BF*PR	0.010560	0.000708	14.90711	0.0000
P	5.93E-08	1.13E-09	52.53952	0.0000
R-squared	0.046527	Mean dependent var		5.650994
Adjusted R-squared	0.046488	S.D. dependent var		0.105288
S.E. of regression	0.102812	Akaike info criterion		-1.711778
Sum squared resid	793.3631	Schwarz criterion		-1.711287
Log likelihood	64247.05	Hannan-Quinn criter.		-1.711627
F-statistic	1220.832	Durbin-Watson stat		0.222922
Prob(F-statistic)	0.000000			

APPENDIX D

EViews OUTPUT FOR COMPONENT MODELS

Random Entity and Fixed Time Effect Model

$$os_{it} = \beta_0 + \beta_1 bf_{it} + \beta_2 (bf \times pr)_{it} + \beta_3 p_{it} + \varepsilon_{it}$$

Dependent Variable: OS

Method: Panel EGLS (Cross-section random effects)

Date: 10/08/09 Time: 13:35

Sample: 1 12

Periods included: 12

Cross-sections included: 6255

Total panel (balanced) observations: 75060

Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5.744121	0.005492	1045.897	0.0000
BF	-0.019009	0.002670	-7.118210	0.0000
BF*PR	-0.002574	0.000551	-4.671625	0.0000
P	6.36E-08	2.62E-09	24.31169	0.0000
Effects Specification				
			S.D.	Rho
Cross-section random			0.086823	0.7481
Period fixed (dummy variables)				
Idiosyncratic random			0.050376	0.2519
Weighted Statistics				
R-squared	0.161039	Mean dependent var	5.650994	
Adjusted R-squared	0.160882	S.D. dependent var	0.055057	
S.E. of regression	0.050434	Sum squared resid	190.8871	
F-statistic	1028.921	Durbin-Watson stat	0.852689	
Prob(F-statistic)	0.000000			
Unweighted Statistics				
R-squared	0.073705	Mean dependent var	5.650994	
Sum squared resid	770.7487	Durbin-Watson stat	0.211181	