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The Economic Impact of Milk Production on the Wisconsin Economy

By

Steven C. Deller

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The Economic Impact of Milk Production on the Wisconsin Economy

Steven C. Deller
Professor and Community Development Economist
521 Taylor Hall – 427 Lorch St.
University of Wisconsin – Madison/Extension
Madison, WI 53706
deller@aae.wisc.edu

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Steven C. Deller
Professor and Community Development Economist
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Summary

The intent of this study is to introduce and report a new method for assessing the economic impact of milk production on the Wisconsin economy. Previous agricultural impact studies have used methods with inherent lags in the timing of the relevant data. In addition, previous studies treated dairy farms as a single entity and did not separate out milk production. Dairy farms are multi-product firms producing milk, cull cows for meat as well as crops. This study focuses on just milk production. By using current annual data from the Wisconsin Agricultural Statistics a more timely analysis is provided. In addition an annual moving average of production levels is used to minimize the role of yearly fluctuate. The summary findings of the current study include:

- Despite the consistently declining number of cows increases in production per cow has stabilized the overall level of milk production. Since 1993 total milk production in Wisconsin has been relatively stable.
- When considering the value of production it has been relatively constant at around $3 billion since 1981. If inflation is considered, the value has been declining in real terms since a peak in 1979.
- Relatively high milk prices in 2004 and again in 2005 saw average annual value of milk production in Wisconsin reach about $3.6 billion.
- The total impact of milk production in Wisconsin is $6.4 billion in industry sales (total industrial output or TIO), slightly more than 80,400 jobs and almost $1.8 billion in total income.
- The region within Wisconsin that has the highest concentration of milk production activity is the East-Central region running from about Green Bay to Lake Winnebago. The smallest impact is in South-Eastern Wisconsin where milk production supports about 2,400 and $54 million in total income.
- The strong ties between dairy farmers and milk processors such as cheese manufacturers are so prevalent that one might consider milk production and processing as one industry.

The report includes historical data from 1945 to 2005 on both production levels as well as production values in addition to the impact analysis using an average of 2003-2004 production data.

Introduction

The intent of this study is to provide the framework for a method which provides more timely and stable estimates of the economic impact of milk production on the Wisconsin economy and select sub-regions. Using production estimates from the Wisconsin Agricultural Statistical Services an annual moving average of total value of production is constructed and used to conduct impact assessment. There are two advantages to using this method. The first is that the Wisconsin Agricultural Statistical Services provides a timely annual estimate of milk production levels. Second, by using a moving average of

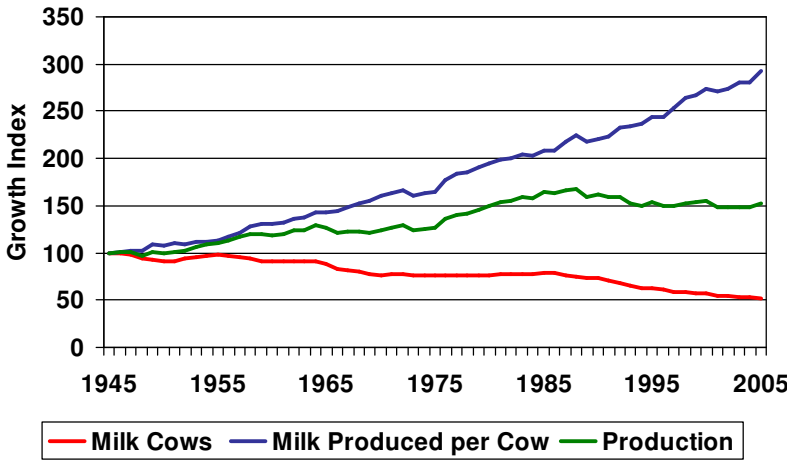
previous years annual swings, or peaks and valleys, in the value of milk production is minimized. This new approach is consistent with previous studies of the economic impact of dairy in that traditional input-output modeling systems are used. Specifically the IMPLAN modeling system is retained but the method used to shock the model has been altered to improve the timeliness and stability of the estimates.

Beyond this brief introduction, the study is composed of three addition sections. Next an overview of milk production trends from 1945 to 2005 is provided. An overview of impact assessment is provided followed by a detailed discussion of the impact of milk production. It is important to note before moving on to the results of the analysis that this study focuses solely on milk production and does *not* consider the other agricultural products produced by dairy farms such as cull cows for meat and/or crops produced for sale to other farmers or processing. ***Thus this study is not directly comparable to previous studies examining the impact of dairy on the Wisconsin economy.***

Historical Trends

There are two traditional metrics used to examine the directly size of the dairy farm sector; volumes of milk production and the dollar value of that production. From 1945 the number of milk cows in Wisconsin has been consistently declining (Figure 1). Other than a period during the 1970s and early 1980s the number of milk cows has declined an average of 1.06 percent per year. At the same time milk production per cow has been consistently by about 1.82 percent per year. In combination total milk production consistently increased from 1945 to a peak in 1986 but has been relatively stable since about 1993. In essence, increased cow productivity has just off-set declining cow numbers.

Figure 1: Milk Production Levels



From the perspective of economic impact the volume of milk production needs to be expressed in terms of milk value; how is the volume of milk measured in terms of dollars. Because of the complexity of the pricing policies of the federal government coupled with unique contracting practices of individual farmers

as well as different pricing structures for different types of mile it is difficult to obtain a "true" measure of the value of milk production. In order to move the analysis forward I using the average annual price for all mike received by Wisconsin dairy farmers as reported by the University of Wisconsin Dairy Marketing and Risk Management Program.[1] These prices are assumed to be paid, on average, across the state. Total value of production is simply total volume of milk production times the average annual price.

Figure 2: Value of Milk Production

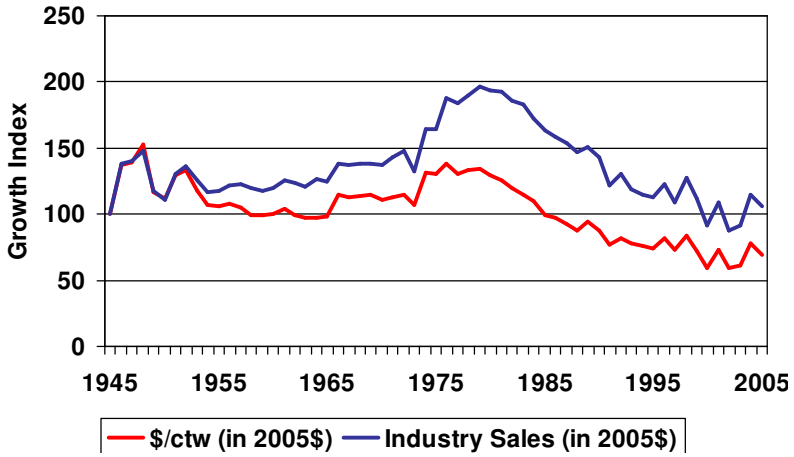
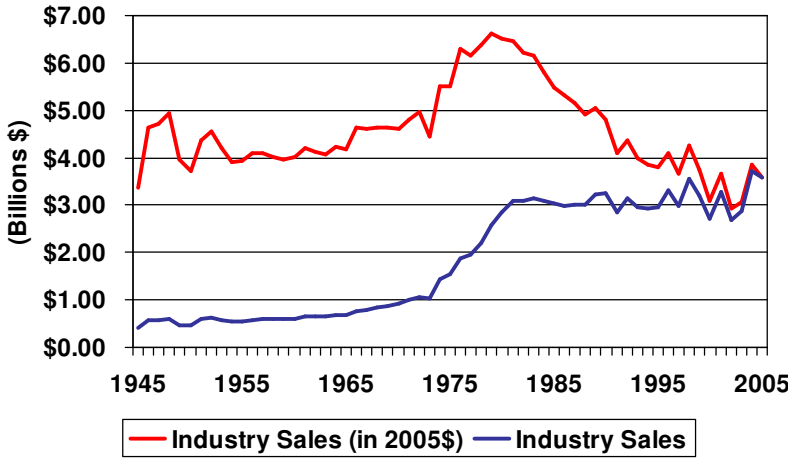


Figure 3: Total Value of Milk Production



The real value of Wisconsin milk prices and the value of total milk production is provided in Figure 2.[2] The peak value of milk production in Wisconsin occurred in 1979 and has been steadily declining since with a low in 2002. It is clear from Figure 2 that the total value of milk production closely tracks the price of milk. In nominal terms, the value of milk production peaked in 2004 at about $3.7 billion but after adjusting for inflation the value of milk production is about the same today as it was in 1945 (Figure 3). If we compare total production from Figure 1 and the value of production in Figure 3 it becomes clear that the

[1] Data are available for download at http://www.aae.wisc.edu/future/front_cash_prices.htm

[2] Real values are adjusted for inflation using the Consumer Price Index. All values are in 2005 dollars.

1970s was a tremendous growth period for milk production in Wisconsin. Declining real milk prices throughout much of the 1980s erased much of that growth; although the nominal value of milk production was stable about 1982 to today, inflation has eroded the real value of milk production. Recent increases in milk prices coupled with low inflation rates over the past few years has seen some increase in the value of milk production.

Another characteristic of Wisconsin milk production over the past few years, particularly since about 1995, appears to be greater instability in the value of production. While agriculture by its nature tends to exhibit patterns of instability, the nominal value of dairy production has historically been relatively stable up until about 1995. This higher level of instability provides the underlying motivation for using a moving average to derive the value of production for use in the impact assessment.

Methods of Impact Assessment

This study uses input-output analysis for assessing how the value of milk production ripples throughout the whole of the states economy. Input-output (IO) is at its roots an accounting method to describe a specific regional economy. One can think of IO as a "spreadsheet" of the economy where the columns are the buyers (demand) and the rows capture the sellers (supply). Any particular cell where a column and row cross is the dollar flow between the buyer and the seller of a particular good or service. The sum of any particular row is the total supply (or output or total sales) of that particular industry and the sum of any particular columns is total demand of the industry. Given the laws of supply and demand within competitive markets, total demand must equal total supply.

The power of IO is not within the data accounting framework that it provides but within the ability to use IO to trace small changes in one part of the economy throughout the entire economy. In the case of the milk production the operation of dairy farms introduces new levels of spending in the economy. This new injection of money into the economy will cause a ripple or multiplier affect throughout the rest of economy. Through the use of IO we can track and measure this economic impact.

While there are several means to measure the size of the economy including industry sales (output), income and employment. Because the IO model is based on the flow of dollars, or sales, the impacts that come directly from the IO are related to industry output or sales. While on its face value this information is of extreme use, in practice policy-makers and concerned citizens often find it difficult to relate to and understand the nature of industry sales and output. Hence methods have been developed and widely employed to convert sales to income and employment. Because the structure of the IO is "linear" the relationship between industry output, employment and income is in fixed proportions. Given these fixed proportions, we can compute changes in output to in terms of changes in employment and income. For

this report the impact of milk production in terms of industry sales (industry output), income and employment.

A better appreciation of the three metrics of economic size (output, employment and income) can be gained by considering the following example. Suppose a dairy farm has one million dollars in annual sales and employs two hired hands along with the owner/operator of the farm. Suppose that the farmer pays the two hired hands $25,000 each and pays herself $50,000 annually. In this simple case, industry sales in $1 million, employment is three, and income is $100,000. If we were interested in looking at changes in the dairy industry using IO then we would look at changes in industry sales, and then track through changes in employment and income.

The economic multipliers that are drawn from IO analysis is composed of three parts. The first is the *direct* or *initial* effect which captures the event that caused the initial change in the economy. Here dairy farms contribute directly to the economy by employing people and paying them wages and salaries. But given the structure of the IO model we know that the operation of dairy farms will have a rippling affect across the whole of the economy. This rippling affect is captured by the second component of a multiplier, or the *indirect* affect and the third component is referred to as the *induced* affect.

In the framework of IO analysis dairy farms have two types of expenditures (costs) that ripple through the economy. The first are business to business transactions such as the purchase of the feed from other farmers, the purchase of trucking services to haul milk, the purchase of electric services, insurance, certain business services, farm maintenance services, among others. These business-to-business transactions are captured by the *indirect* affects. Farmers use the proceeds from the sales of feed to dairy farmers to make investments in the farm, purchase new equipment, or buy supplies. Suppose the farmer uses the proceeds to purchase a new truck from a local dealership. That purchase represents sales to the truck dealership which in turn uses parts of that sale to pay his or her bills. This is an example of the ripple affect captured by the *indirect* component of the multiplier.

The second type of expenditure dairy farms introduce into the economy is wages and salaries paid to employees and the spending of this income in the regional economy is captured by the *induced* affect. Dairy farmers and their employees spend their income at the local grocery stores, movie theaters, restaurants, as well as paying their mortgages or rent. The owner of the theater uses part of that money spent by dairy farmers to pay their employees and the cycle continues.

The *indirect* and *induced* affects are intertwined but within the structure of the IO can be separated. Consider the grain farmer that is making sales to dairy farmers. In the above example the farmer elected to the additional revenues (sales) to make purchases from other businesses, and hence can be captured

with the *indirect* affect. That farmer may have elected to take part of that additional revenue as additional income going directly to the farmer as an employee of the farm business. In this case the farmer spending additional income would be captured in the *induced* component of the multiplier. In the example above where dairy farm employees spend part of their income at the movie theater the owner of the theater may elect to use part of that additional revenue to pay the theater's electric bill; this would be an example of an *indirect* affect.

One of the insights into looking at *indirect* and *induced* affects separately centers on the labor intensity or wage structure of the industry being examined. Farming, for example, has tended to make much larger *indirect* than *induced* affects. This implies that farming is very capital intensive and/or may not pay the highest wages to employees. Financial service industries, on the other hand, tend to have low *indirect* but fairly high *induced* affects. This seems to make intuitive sense in that other than computers and basic office supplies financial services companies tend to be a very low-capital intensive industry, but is rather labor intensive and can pay very high wages.

The Impact of Milk Production on Wisconsin

In order to provide insights into the impact of milk production on specific regions within Wisconsin this study uses the two most recent years of regional production estimates provided by the Wisconsin Agricultural Statistical Services. As described above, a two year average of production levels is used for the state as a whole and the nine reporting districts as defined by the Wisconsin Agricultural Statistics Service (See Appendix Table A for reporting district definitions). The average production values across these nine reporting regions for 2004 and 2005 are provided in Table 1.

Table 1: USDA NASS Milk Estimates

	Share of Total		Value of Share
NW District	7.4%	$	269,291,371
NC District	11.8%	$	429,031,577
NE District	6.2%	$	225,478,311
WC District	13.4%	$	488,997,724
C District	7.3%	$	267,397,833
EC District	22.9%	$	835,409,824
SW District	13.8%	$	505,299,761
SC District	13.2%	$	480,883,737
SE District	4.1%	$	147,940,362
Total	100.0%	$	3,649,730,500

Source: Wisconsin Agricultural Statistical Services

Despite Wisconsin's reputation as the Dairy State, there is significant variation is in contribution of milk production across Wisconsin. The largest production area with 22.9 percent of production share, about $835 million in sales, is the East-Central District which runs from Green Bay to the region around Lake Winnebago. The lowest level of production is the South-Eastern District, which is almost the most urban part of Wisconsin, where only 4.1 percent of all of Wisconsin milk is produced. The West-Central District, which runs from La Crosse to Eau Claire, is more typical of the state with $489 million is sales or about 13.4 percent of the state's total production.

In it important to keep in mind that the analysis assumes that the price of milk is constant across the state and that all milk commands the same price. In 2003, for example, the price for Grade A milk was an average of $12.90/ctw while the price for Grade B milk averaged $12.0/ctw. While the vast majority of Wisconsin milk is classified as Grade A there is greater variation in the value of milk production in Wisconsin then is reflected in Table 1.

The results of the impact assessment are provided in Table 2. Using the three metrics of economic activity outlined above the overall impact of milk production on the Wisconsin economy is $6.4 billion in terms of industry sales, about 80,500 jobs and almost $1.8 billion in total income. These levels account for 1.7 percent of Wisconsin's total industrial sales, 2.4 percent of total employment, and 0.9 percent of total income in Wisconsin. The implicit industry sales or output multiplier is 1.757 which suggests that for every dollar of additional milk production, the total impact on the Wisconsin economy will be $1.76; or 76 cents of additional economic activity. For every additional $1 million in milk production an additional 22 jobs will be created through the direct, indirect and induced affects. Similarly the same additional $1 million in milk production will generate $486,000 in income through the direct, indirect and induced multiplier affects.

Before describing the results of the sub-regional analysis presented in Table 2 it is important to recall that that individual input-output models were constructed for the nine sub-regions. While the simple descriptive analysis presented in Table 1 is a strong predictor of the total economic impacts presented in Table 2 there are important differences in local regional economic structures. For example, the industry sales multiplier ranges from a low of 1.463 for the South-Eastern District to 1.757 for the West-Central District. The variations in the industry output or sales multiplier reflect the fundamental differences in the structure of not only the dairy industry within each region but also the structure of the regional economy itself.

Table 2: Summary of Milk Production Economic Impacts

	Total Industry Output	Employment	Total Income
NW District	$ 461,781,480	6,178	$ 105,684,351
NC District	$ 705,169,872	10,234	$ 172,777,927
NE District	$ 367,872,321	5,407	$ 85,094,790
WC District	$ 858,935,759	11,819	$ 220,319,670
C District	$ 432,977,159	5,386	$ 100,474,372
EC District	$ 1,284,737,479	15,249	$ 327,338,743
SW District	$ 870,612,672	11,829	$ 216,423,912
SC District	$ 809,513,263	9,590	$ 223,674,851
SE District	$ 216,431,424	2,485	$ 54,444,237
Wisconsin	$ 6,413,313,053	80,472	$ 1,774,932,063

The East-Central District has the largest economic impact with milk production having a total economic impact of almost $1.3 billion in industrial output, some 15,200 jobs and just over $327 million in total income. As expected the smallest impact is in South-East Wisconsin with milk production contributing $216 million to the regional economy through the direct, indirect and induced affects, about 2,500 jobs and $54.4 million in total income.

Table 3: Detailed Wisconsin Milk Production Impact

Total Industry Output				
	Direct*	Indirect*	Induced*	Total*
Agriculture	$ 3,649,730,560	$ 906,583,232	$ 7,794,397	$ 4,564,108,288
Mining	$ -	$ 115,138,912	$ 17,873,914	$ 133,012,832
Construction	$ -	$ 913,396	$ 287,509	$ 1,200,905
Manufacturing	$ -	$ 825,918,912	$ 305,915,136	$ 1,131,834,112
TCPU	$ -	$ 41,837,232	$ 20,726,886	$ 62,564,120
Trade	$ -	$ 85,742,968	$ 17,204,004	$ 102,946,976
FIRE	$ -	$ 25,246,628	$ 14,765,271	$ 40,011,900
Services	$ -	$ 90,111,552	$ 287,522,368	$ 377,633,920
Total	$ 3,649,730,560	$ 2,091,492,832	$ 672,089,485	$ 6,413,313,053

Employment				
Agriculture	48,912	14,479	113	63,505
Mining	0	489	74	564
Construction	0	1	1	1
Manufacturing	0	5,927	3,047	8,975
TCPU	0	452	217	669
Trade	0	1,350	245	1,595
FIRE	0	307	273	580
Services	0	1,043	3,539	4,583
Total	48,912	24,049	7,511	80,472

Total Income				
Agriculture	401,964,736	301,219,008	2,934,970	706,118,720
Mining	0	60,366,644	11,023,290	71,389,928
Construction	0	72,691	65,536	138,227
Manufacturing	0	493,565,952	175,280,304	668,846,272
TCPU	0	25,304,082	12,978,435	38,282,516
Trade	0	43,437,104	10,390,187	53,827,292
FIRE	0	12,203,504	7,960,163	20,163,668
Services	0	38,847,868	177,317,568	216,165,440
Total	401,964,736	975,016,853	397,950,452	1,774,932,063

In Table 3 the impact of milk production on the whole of the Wisconsin economy is decomposed along two lines. First, the total impacts are reported across industry types and second by direct, indirect and induced affects. The same decomposition of the nine reporting regions is provided in Appendix Tables

B1 through B9. Two patterns are apparent from the decomposition presented in Table 3. First, the bulk of the impact of milk production is in the form of indirect affect or business-to-business transactions. Second, other than feedback back onto agriculture itself such as feed purchases the largest impact is on manufacturing. This makes sense given that the majority of milk produced in Wisconsin is used to make cheese and other dairy value added industries. All of these transactions are captured as indirect affects flowing into the manufacturing sector.

This observation raises the question about whether or not milk production and milk processing, in particular cheese production, should be treated as separate industries. While milk producers and cheese manufacturing firms tend to be separate firms are they part of one industry? Phrased in a manner consistent with impact assessment, if all dairy farmers in Wisconsin stopped production, would milk processors and particular cheese manufacturers also cease to exist in Wisconsin? While milk could be shipped into Wisconsin this does not appear to be a long-term sustainable position. On the other hand, if cheese production were to cease in Wisconsin would milk production continue at its current levels? Because of the unique linkages between these two industries, one could argue that they should be treated as one integrated industry.

Conclusions

This study introduces a new method for assessing the economic impact of milk production on the Wisconsin economy and nine sub-regions within Wisconsin. Using milk production data from the Wisconsin Agricultural Statistical Service a moving average of total value of production is computed and used to shock in IMPLAN derived input-output model of the state economy. This will allow for more timely estimates of the impact of milk production on the economy than previously available.

The historical analysis suggests that milk production has plateaud but at the same time there has been a marketable increase in the instability around that plateau. The use of a moving average is intended to minimize the influence of this increased instability on the impact estimates. Relatively high milk prices in 2004 and again in 2005 saw average annual value of milk production in Wisconsin reach about $3.6 billion. The total impact of milk production in Wisconsin is $6.4 billion in industry sales (total industrial output or TIO), slightly more than 80,400 jobs and almost $1.8 billion in total income. The region within Wisconsin that has the highest concentration of milk production activity is the East-Central region running from about Green Bay to Lake Winnebago. The smallest impact is in South-Eastern Wisconsin where milk production supports about 2,400 and $54 million in total income. The strong ties between dairy farmers and milk processors such as cheese manufacturers are so prevalent that one might consider milk production and processing as one industry.

Appendices

Table A: Regional Definitions

NW District	NC District	NE District
Barron	Ashland	Florence
Bayfield	Clark	Forest
Burnett	Iron	Langlade
Chippewa	Lincoln	Marinette
Douglas	Marathon	Oconto
Polk	Oneida	Shawano
Rusk	Price	
Sawyer	Taylor	
Washburn	Vilas	
WC District	**C District**	**EC District**
Buffalo	Adams	Brown
Dunn	Green Lake	Calumet
Eau Claire	Juneau	Door
Jackson	Marquette	Fond Du Lac
La Crosse	Portage	Kewaunee
Monroe	Waupaca	Manitowoc
Pepin	Waushara	Outagamie
Pierce	Wood	Sheboygan
St. Croix		Winnebago
Trempealeau		
SW District	**SC District**	**SE District**
Crawford	Columbia	Kenosha
Grant	Dane	Milwaukee
Iowa	Dodge	Ozaukee
Lafayette	Green	Racine
Richland	Jefferson	Walworth
Sauk	Rock	Washington
Vernon		Waukesha

Table B1: Detailed SE Wisconsin Milk Production Impact

Total Industry Output				
	Direct*	Indirect*	Induced*	Total*
Agriculture	$ 147,940,368	$ 9,462,738	$ 80,056	$ 157,483,168
Mining	$ -	$ 2,931,390	$ 461,139	$ 3,392,528
Construction	$ -	$ 34,642	$ 5,029	$ 39,671
Manufacturing	$ -	$ 28,830,470	$ 8,135,854	$ 36,966,324
TCPU	$ -	$ 1,493,237	$ 594,933	$ 2,088,170
Trade	$ -	$ 3,197,172	$ 493,686	$ 3,690,858
FIRE	$ -	$ 949,590	$ 503,569	$ 1,453,160
Services	$ -	$ 3,064,228	$ 8,253,318	$ 11,317,545
Total	$ 147,940,368	$ 49,963,467	$ 18,527,583	$ 216,431,424

Employment				
Agriculture	1,810	141	1	1,952
Mining	0	14	2	16
Construction	0	0	0	0
Manufacturing	0	204	81	286
TCPU	0	16	6	22
Trade	0	52	7	59
FIRE	0	12	9	21
Services	0	34	96	130
Total	1,810	473	203	2,485

Total Income				
Agriculture	$ 16,293,432	$ 2,314,663	$ 35,225	$ 18,643,320
Mining	$ -	$ 1,788,408	$ 269,005	$ 2,057,414
Construction	$ -	$ 3,346	$ 1,100	$ 4,446
Manufacturing	$ -	$ 18,300,444	$ 4,930,071	$ 23,230,514
TCPU	$ -	$ 903,337	$ 373,270	$ 1,276,608
Trade	$ -	$ 1,586,750	$ 298,545	$ 1,885,295
FIRE	$ -	$ 476,937	$ 283,302	$ 760,240
Services	$ -	$ 1,427,793	$ 5,158,607	$ 6,586,401
Total	$ 16,293,432	$ 26,801,679	$ 11,349,125	$ 54,444,237

Table B2: Detailed SC Wisconsin Milk Production Impact

Total Industry Output				
	Direct*	Indirect*	Induced*	Total*
Agriculture	$ 480,883,744	$ 102,025,728	$ 498,751	$ 583,408,192
Mining	$ -	$ 12,487,402	$ 2,008,034	$ 14,495,436
Construction	$ -	$ 8,059	$ 1,019	$ 9,078
Manufacturing	$ -	$ 103,185,032	$ 37,001,908	$ 140,186,944
TCPU	$ -	$ 5,055,190	$ 2,438,061	$ 7,493,251
Trade	$ -	$ 10,594,703	$ 1,951,287	$ 12,545,990
FIRE	$ -	$ 3,176,126	$ 1,321,055	$ 4,497,180
Services	$ -	$ 11,256,437	$ 35,620,756	$ 46,877,192
Total	$ 480,883,744	$ 247,788,677	$ 80,840,871	$ 809,513,263

Employment				
Agriculture	5,917	1,511	8	7,436
Mining	0	59	9	68
Construction	0	0	0	0
Manufacturing	0	812	379	1,191
TCPU	0	54	25	79
Trade	0	167	28	194
FIRE	0	36	25	61
Services	0	123	438	561
Total	5,917	2,761	911	9,590

Total Income				
Agriculture	$ 52,962,508	$ 35,116,684	$ 195,808	$ 88,275,000
Mining	$ -	$ 7,338,967	$ 1,290,528	$ 8,629,495
Construction	$ -	$ 410	$ 52	$ 463
Manufacturing	$ -	$ 64,410,624	$ 21,687,568	$ 86,098,192
TCPU	$ -	$ 3,076,637	$ 1,530,339	$ 4,606,976
Trade	$ -	$ 5,414,546	$ 1,175,698	$ 6,590,244
FIRE	$ -	$ 1,581,887	$ 667,914	$ 2,249,801
Services	$ -	$ 4,965,914	$ 22,258,766	$ 27,224,680
Total	$ 52,962,508	$ 121,905,669	$ 48,806,674	$ 223,674,851

Table B3: Detailed SW Wisconsin Milk Production Impact

Total Industry Output				
	Direct*	Indirect*	Induced*	Total*
Agriculture	$ 505,299,776	$ 181,381,200	$ 1,056,018	$ 687,736,960
Mining	$ -	$ 11,844,048	$ 1,701,856	$ 13,545,904
Construction	$ -	$ 23,212	$ 12,599	$ 35,811
Manufacturing	$ -	$ 80,304,384	$ 24,666,276	$ 104,970,656
TCPU	$ -	$ 2,862,189	$ 1,206,575	$ 4,068,763
Trade	$ -	$ 10,158,029	$ 863,999	$ 11,022,028
FIRE	$ -	$ 2,730,253	$ 589,002	$ 3,319,255
Services	$ -	$ 14,187,368	$ 31,725,930	$ 45,913,296
Total	$ 505,299,776	$ 303,490,682	$ 61,822,254	$ 870,612,672

Employment				
Agriculture	6,953	2,914	18	9,884
Mining	0	66	8	74
Construction	0	0	0	0
Manufacturing	0	702	306	1,009
TCPU	0	38	16	53
Trade	0	165	16	181
FIRE	0	27	9	37
Services	0	170	422	591
Total	6,953	4,081	795	11,829

Total Income				
Agriculture	$ 55,651,200	$ 54,933,688	$ 351,931	$ 110,936,816
Mining	$ -	$ 6,994,767	$ 1,065,652	$ 8,060,419
Construction	$ -	$ 3,474	$ 1,886	$ 5,360
Manufacturing	$ -	$ 48,915,328	$ 15,008,054	$ 63,923,384
TCPU	$ -	$ 1,638,902	$ 730,718	$ 2,369,620
Trade	$ -	$ 4,976,319	$ 473,725	$ 5,450,044
FIRE	$ -	$ 1,179,902	$ 247,086	$ 1,426,988
Services	$ -	$ 5,262,200	$ 18,989,082	$ 24,251,282
Total	$ 55,651,200	$ 123,904,579	$ 36,868,134	$ 216,423,912

Table B4: Detailed EC Wisconsin Milk Production Impact

Total Industry Output				
	Direct*	Indirect*	Induced*	Total*
Agriculture	$ 835,409,792	$ 129,081,976	$ 777,083	$ 965,268,864
Mining	$ -	$ 21,524,908	$ 3,355,822	$ 24,880,730
Construction	$ -	$ 14,060	$ 1,449	$ 15,509
Manufacturing	$ -	$ 138,300,000	$ 50,644,216	$ 188,944,224
TCPU	$ -	$ 6,167,695	$ 2,583,692	$ 8,751,387
Trade	$ -	$ 16,776,045	$ 2,792,070	$ 19,568,114
FIRE	$ -	$ 4,360,360	$ 2,622,716	$ 6,983,076
Services	$ -	$ 16,495,908	$ 53,829,668	$ 70,325,576
Total	$ 835,409,792	$ 332,720,951	$ 116,606,716	$ 1,284,737,479

Employment				
Agriculture	10,013	2,119	12	12,144
Mining	0	95	14	109
Construction	0	0	0	0
Manufacturing	0	1,071	558	1,629
TCPU	0	68	29	97
Trade	0	260	41	301
FIRE	0	53	50	104
Services	0	200	665	865
Total	10,013	3,867	1,369	15,249

Total Income				
Agriculture	$ 92,008,568	$ 46,877,316	$ 274,399	$ 139,160,288
Mining	$ -	$ 12,615,422	$ 2,162,785	$ 14,778,206
Construction	$ -	$ 732	$ 74	$ 806
Manufacturing	$ -	$ 84,972,352	$ 29,428,410	$ 114,400,760
TCPU	$ -	$ 3,736,751	$ 1,593,846	$ 5,330,597
Trade	$ -	$ 8,597,448	$ 1,687,463	$ 10,284,912
FIRE	$ -	$ 1,964,584	$ 1,339,158	$ 3,303,742
Services	$ -	$ 7,019,517	$ 33,059,916	$ 40,079,432
Total	$ 92,008,568	$ 165,784,122	$ 69,546,052	$ 327,338,743

Table B5: Detailed C Wisconsin Milk Production Impact

Total Industry Output				
	Direct*	Indirect*	Induced*	Total*
Agriculture	$ 267,397,840	$ 83,661,264	$ 420,632	$ 351,479,744
Mining	$ -	$ 4,505,197	$ 594,230	$ 5,099,427
Construction	$ -	$ -	$ -	$ -
Manufacturing	$ -	$ 34,888,024	$ 11,639,648	$ 46,527,672
TCPU	$ -	$ 1,262,255	$ 506,976	$ 1,769,231
Trade	$ -	$ 4,267,717	$ 464,136	$ 4,731,852
FIRE	$ -	$ 1,328,044	$ 333,252	$ 1,661,296
Services	$ -	$ 5,842,803	$ 15,865,135	$ 21,707,938
Total	$ 267,397,840	$ 135,755,303	$ 29,824,008	$ 432,977,159

Employment				
Agriculture	3,359	1,175	6	4,540
Mining	0	28	3	31
Construction	0	0	0	0
Manufacturing	0	280	143	422
TCPU	0	17	7	24
Trade	0	62	5	67
FIRE	0	13	7	20
Services	0	73	210	282
Total	3,359	1,647	380	5,386

Total Income				
Agriculture	$ 29,449,946	$ 24,088,360	$ 159,206	$ 53,697,512
Mining	$ -	$ 2,354,284	$ 327,659	$ 2,681,943
Construction	$ -	$ -	$ -	$ -
Manufacturing	$ -	$ 21,272,340	$ 6,832,743	$ 28,105,084
TCPU	$ -	$ 708,188	$ 300,005	$ 1,008,193
Trade	$ -	$ 2,158,810	$ 269,190	$ 2,428,001
FIRE	$ -	$ 617,854	$ 156,297	$ 774,151
Services	$ -	$ 2,273,350	$ 9,506,138	$ 11,779,488
Total	$ 29,449,946	$ 53,473,186	$ 17,551,238	$ 100,474,372

Table B6: Detailed WC Wisconsin Milk Production Impact

Total Industry Output				
	Direct*	Indirect*	Induced*	Total*
Agriculture	$ 488,997,728	$ 168,173,232	$ 1,282,401	$ 658,453,376
Mining	$ -	$ 13,362,443	$ 2,171,737	$ 15,534,180
Construction	$ -	$ 9,330	$ 1,483	$ 10,813
Manufacturing	$ -	$ 84,490,472	$ 29,803,954	$ 114,294,432
TCPU	$ -	$ 4,328,971	$ 1,917,731	$ 6,246,702
Trade	$ -	$ 10,852,649	$ 1,703,310	$ 12,555,959
FIRE	$ -	$ 2,916,788	$ 1,146,633	$ 4,063,421
Services	$ -	$ 12,758,273	$ 35,018,604	$ 47,776,876
Total	$ 488,997,728	$ 296,892,157	$ 73,045,853	$ 858,935,759

Employment				
Agriculture	7,057	2,687	20	9,764
Mining	0	65	9	74
Construction	0	0	0	0
Manufacturing	0	686	358	1,044
TCPU	0	51	22	72
Trade	0	178	27	205
FIRE	0	33	22	54
Services	0	152	453	605
Total	7,057	3,852	910	11,819

Total Income				
Agriculture	$ 53,855,848	$ 48,908,328	$ 425,061	$ 103,189,232
Mining	$ -	$ 7,823,105	$ 1,309,478	$ 9,132,583
Construction	$ -	$ 459	$ 73	$ 532
Manufacturing	$ -	$ 52,135,948	$ 17,575,704	$ 69,711,648
TCPU	$ -	$ 2,564,322	$ 1,184,060	$ 3,748,382
Trade	$ -	$ 5,360,175	$ 1,021,231	$ 6,381,406
FIRE	$ -	$ 1,316,694	$ 589,884	$ 1,906,578
Services	$ -	$ 5,041,114	$ 21,208,196	$ 26,249,310
Total	$ 53,855,848	$ 123,150,144	$ 43,313,687	$ 220,319,670

Table B7: Detailed NE Wisconsin Milk Production Impact

Total Industry Output				
	Direct*	Indirect*	Induced*	Total*
Agriculture	$ 225,478,304.0	$ 80,843,472.0	$ 453,756.9	$ 306,775,520.0
Mining	$ -	$ 2,047,637.8	$ 344,509.1	$ 2,392,147.0
Construction	$ -	$ -	$ -	$ -
Manufacturing	$ -	$ 23,671,676.0	$ 9,234,609.0	$ 32,906,286.0
TCPU	$ -	$ 1,280,064.8	$ 420,133.6	$ 1,700,198.3
Trade	$ -	$ 3,356,959.0	$ 212,494.8	$ 3,569,453.8
FIRE	$ -	$ 1,132,594.1	$ 272,028.0	$ 1,404,622.1
Services	$ -	$ 5,009,312.5	$ 14,114,781.0	$ 19,124,094.0
Total	$ 225,478,304.0	$ 117,341,716.1	$ 25,052,312.3	$ 367,872,321.1

Employment				
Agriculture	3,261	1,425	8	4,695
Mining	0	21	2	24
Construction	0	0	0	0
Manufacturing	0	213	139	352
TCPU	0	18	6	24
Trade	0	53	3	56
FIRE	0	12	5	17
Services	0	59	181	239
Total	3,261	1,802	344	5,407

Total Income				
Agriculture	$ 24,833,160	$ 26,286,892	$ 169,911	$ 51,289,960
Mining	$ -	$ 984,518	$ 148,510	$ 1,133,028
Construction	$ -	$ -	$ -	$ -
Manufacturing	$ -	$ 13,659,940	$ 5,605,278	$ 19,265,218
TCPU	$ -	$ 715,947	$ 243,944	$ 959,891
Trade	$ -	$ 1,595,143	$ 102,731	$ 1,697,875
FIRE	$ -	$ 472,599	$ 113,698	$ 586,296
Services	$ -	$ 1,765,435	$ 8,397,087	$ 10,162,521
Total	$ 24,833,160	$ 45,480,474	$ 14,781,158	$ 85,094,790

Table B8: Detailed NC Wisconsin Milk Production Impact

Total Industry Output				
	Direct*	Indirect*	Induced*	Total*
Agriculture	$ 429,031,584	$ 124,811,640	$ 854,236	$ 554,697,472
Mining	$ -	$ 7,436,228	$ 1,073,632	$ 8,509,860
Construction	$ -	$ -	$ -	$ -
Manufacturing	$ -	$ 62,896,660	$ 23,574,600	$ 86,471,256
TCPU	$ -	$ 3,420,207	$ 1,589,256	$ 5,009,462
Trade	$ -	$ 8,014,586	$ 723,911	$ 8,738,497
FIRE	$ -	$ 2,335,265	$ 1,045,212	$ 3,380,477
Services	$ -	$ 9,284,645	$ 29,078,202	$ 38,362,848
Total	$ 429,031,584	$ 218,199,230	$ 57,939,049	$ 705,169,872

Employment				
Agriculture	6,477	2,087	15	8,579
Mining	0	50	7	57
Construction	0	0	0	0
Manufacturing	0	535	292	828
TCPU	0	44	19	63
Trade	0	140	13	153
FIRE	0	25	21	46
Services	0	121	388	509
Total	6,477	3,001	755	10,234

Total Income				
Agriculture	$ 47,251,728	$ 38,728,332	$ 258,958	$ 86,239,024
Mining	$ -	$ 3,983,392	$ 647,671	$ 4,631,063
Construction	$ -	$ -	$ -	$ -
Manufacturing	$ -	$ 37,874,584	$ 14,173,539	$ 52,048,124
TCPU	$ -	$ 1,996,836	$ 992,680	$ 2,989,516
Trade	$ -	$ 3,708,509	$ 405,644	$ 4,114,153
FIRE	$ -	$ 1,067,825	$ 499,390	$ 1,567,215
Services	$ -	$ 3,510,356	$ 17,678,476	$ 21,188,832
Total	$ 47,251,728	$ 90,869,833	$ 34,656,358	$ 172,777,927

Table B9: Detailed NW Wisconsin Milk Production Impact

Total Industry Output				
	Direct*	Indirect*	Induced*	Total*
Agriculture	$ 269,291,360	$ 93,238,800	$ 440,288	$ 362,970,464
Mining	$ -	$ 6,943,116	$ 954,513	$ 7,897,630
Construction	$ -	$ 18,503	$ 238	$ 18,741
Manufacturing	$ -	$ 47,452,720	$ 12,039,097	$ 59,491,816
TCPU	$ -	$ 1,466,412	$ 504,808	$ 1,971,220
Trade	$ -	$ 5,081,114	$ 313,798	$ 5,394,912
FIRE	$ -	$ 1,487,166	$ 429,764	$ 1,916,931
Services	$ -	$ 7,032,237	$ 15,087,532	$ 22,119,768
Total	$ 269,291,360	$ 162,720,067	$ 29,770,039	$ 461,781,480

Employment				
Agriculture	3,830	1,430	7	5,267
Mining	0	37	4	41
Construction	0	0	0	0
Manufacturing	0	284	153	437
TCPU	0	20	7	27
Trade	0	90	6	95
FIRE	0	16	10	25
Services	0	83	202	285
Total	3,830	1,960	389	6,178

Total Income				
Agriculture	$ 29,658,382	$ 27,376,288	$ 186,010	$ 57,220,680
Mining	$ -	$ 4,090,392	$ 580,657	$ 4,671,049
Construction	$ -	$ 414	$ 5	$ 420
Manufacturing	$ -	$ 21,130,366	$ 6,746,705	$ 27,877,072
TCPU	$ -	$ 818,808	$ 299,450	$ 1,118,258
Trade	$ -	$ 2,261,296	$ 162,402	$ 2,423,698
FIRE	$ -	$ 660,973	$ 210,194	$ 871,167
Services	$ -	$ 2,569,228	$ 8,932,779	$ 11,502,007
Total	$ 29,658,382	$ 58,907,765	$ 17,118,202	$ 105,684,351