

rethinking Dairyland

Background for Decisions about Wisconsin's Dairy Industry



No. 2 — June 2002

GOT JOBS?

After accounting for the multiplier effect, the Wisconsin dairy industry accounted for roughly 5.1 percent of all employment in Wisconsin, 3.6 percent of Wisconsin's gross state product, and 5.9 percent of total Wisconsin industrial sales.

Dairy's contribution to the Wisconsin economy takes many forms. Most obvious is the direct or initial contribution through on-farm and processing employment and income generation. For 1999, the most current year for which complete income and employment data are available, dairy production, both on-farm and dairy processing, accounted for 80,500 jobs or about 2.6 percent of all employment in Wisconsin and \$1.9 billion worth of income. Total industrial sales from dairy farms and dairy processors combined amounted to \$11.7 billion, accounting for 1.3 percent of Wisconsin's total industrial sales.

How dairying's impact multiplies

But that's only part of the picture. Other industries are linked, through indirect and induced effects, to the dairy industry. These industries represent additional sources of economic activity, in essence multiplying the effects of the direct activity of dairy production and processing. The dairy industry impacts many parts of the larger Wisconsin economy through this multiplier effect.

The dairy industry uses machinery, trucks, fuel, financial and other businesses services and a range of inputs from other industries. These linkages, or indirect effects, create a network of interdependent industries, which in turn generate additional jobs and income in non-dairy industries. The income generated directly by dairy farms and processors also adds to this interdependency; on-farm and dairy processing

employees spend their wages and salaries on groceries, housing, entertainment, and a range of other consumer goods and services. In turn employees in these industries spend their income on consumer goods and services. These additional linkages, beyond dairy and indirectly related sectors of the economy, create induced effects, which help to form a complex intertwining of industries within Wisconsin. So the relevant question to ask is not what dairy adds to the Wisconsin economy directly through income and employment generation, but rather how much does agriculture contribute to the Wisconsin economy through this complex networking of industries.

Tracking the links between industries.

There are many ways to analyze regional economies and measure the linkages between sectors. To measure the impact of Wisconsin dairying, we used a social accounting matrix — basically a "snapshot" of the economy that looks at the sales and purchases of goods and services between all sectors of the economy for a given period of time.

By looking at dairy firms' spending and sales, we can assess the contribution of the dairy industry to Wisconsin's economy. By tracing the flow of dairy-related dollars throughout the economy we can capture and measure the "multiplier effect."

We used a software package, IMPLAN (Impact PLANning), to create the social accounting matrix for

This is part of a series of brief reports on the current state of the Wisconsin dairy industry and factors that will influence its evolution. All reports in the series, along with expanded versions containing additional data and graphics, can be accessed at the following web address: <http://www.aae.wisc.edu/www/pub/>

If you do not have internet access, copies can be obtained from Ms. Linda Davis, Department of Agricultural and Applied Economics, University of Wisconsin-Madison, 427 Lorch St., Madison, WI 53706. Telephone (608) 262-9488 or email davis@aae.wisc.edu

Wisconsin. All analyses reported here are for calendar year 1999, the most recent year for which the data are available. The model has detail for 486 business sectors and 17 institutional sectors (i.e., household groups, governments, etc.).

What the analysis shows

For this analysis we looked at three levels of economic activity: on-farm dairy production; off-farm dairy processing; and on- and off-farm dairy operations combined. The results of these analyses are presented in Tables 1-3.

Accounting for the multiplier affect, here's what the Wisconsin dairy industry contributes to the state's economy:

- About 174,000 jobs, representing about 5.1 percent of all employment in Wisconsin
- About \$5.7 billion income going to households (about 3.6 percent of Wisconsin's gross state product)
- About \$18.5 billion in industrial sales (about 5.9 percent of total Wisconsin industrial sales)

Separately, on-farm dairy production accounted for 90,700 jobs, \$1.5 billion in household income and \$4.9 billion in industrial sales. The Wisconsin dairy processing sector accounted for 99,700 jobs, \$4.8 billion in household income (gross state product) and about \$17 billion in industrial sales.

Avoiding double-counting jobs

It is important to note that the sum of the two individual components of the combined dairy sector, on-farm production and off-farm processing, do not add to the combined effects. In other words, directly adding the summaries of Tables 1 and 2 will not result in Table 3. The whole is not equal to the sum of the parts because of "spillover" effects between the two components. Clearly on-farm production influences off-farm processing and the demand for raw milk by processors influences on-farm production. In that sense, on-farm production and off-farm processing are mutually interdependent. The analysis summarized in Table 1 captures the dependency going in one direction while the analysis in Table 2 captures the dependency going in the other direction. Adding Table 1 to Table 2 would double count those co-dependencies and thereby result in a double counting error.

If dairy ceased to exist

This analysis doesn't suggest that if dairying ceased to exist total employment in Wisconsin would decline by 5.1 percent or gross state product (household income) would decline by \$5.7 billion. For that to happen, all employees connected to dairying would have to pack up their families and leave Wisconsin, and all of the inputs used for dairying — either directly, such as land, or indirectly through the multiplier effect — would have to be left idle. That's not going to happen.

A more reasonable interpretation is that the dairy industry is "connected" to these dollars and jobs either directly or through the multiplier effect.

Nearly every sector is tied to dairy

Looking at the contribution of the dairy industry to Wisconsin across different sectors of the economy shows that the Wisconsin economy is extremely intertwined and interdependent; nearly every sector in Wisconsin is linked to dairy. For example, the dairy industry affects the construction industry to the tune of almost 3,600 jobs annually. Retail and wholesale trade takes in nearly \$1.2 billion in household income from dairy. In terms of industrial sales, 36.5 percent of the total impact of dairy comes from sectors other than dairying itself. In terms of income, 66.8 percent of the total \$5.7 billion impact comes from non-dairy sectors. The "rippling," or multiplier effect that dairying has on Wisconsin's economy is significant. Most of it comes from dairy processing.

The tax impact

The economic activity generated by dairy adds significantly to tax revenues at both the federal and state and local levels (Table 4). On-farm dairying creates almost \$241 million in federal tax revenues while all of dairying generates in excess of \$1 billion in federal taxes. On-farm dairy operations generate about \$158 million in state and local taxes (not including support for K-12 public education) while all of dairying generates \$688 million in state and local tax revenues. These tax revenue figures include taxes paid directly by dairy operators and employees and taxes from all the economic activity generated by the dairy industry.

This factsheet is based on Market and Policy Briefing Paper No. 78A. To obtain a copy, see page 1 of this factsheet.

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TABLE 1: Economic Impact, On Farm Dairy, 1999 Wisconsin

<u>Sector</u>	<u>Jobs</u>	<u>Total Income (\$1,000)</u>	<u>Industrial Output (Sales/\$1,000)</u>
Dairy Farm Products	63,742	542,322	3,146,199
Agriculture	11,721	119,926	383,807
Mining	4	503	752
Construction	1,136	50,064	87,557
Manufacturing	665	44,946	143,880
TCPU*	1,864	149,792	273,886
Trade	5,170	256,209	357,539
FIRE**	1,919	185,603	267,539
Services	4,331	142,517	230,702
Government	197	12,154	28,670
Total	90,748	1,504,037	4,920,532
Implicit Multiplier	1.424	2.773	1.564
Wisconsin State Total	3,393,514	161,484,190	311,245,490
Percent of State Total	2.7%	0.9%	1.6%
Initial	63,742	542,322	3,146,199
Indirect	19,795	645,892	1,264,629
Induced	7,211	315,823	509,703
Total	90,748	1,504,037	4,920,531

* TCPU: Transportation, Communications, and Public Utilities

**FIRE: Finance, Insurance, and Real Estate

TABLE 2: Economic Impact, Off Farm Dairy Processing, 1999 Wisconsin

<u>Sector</u>	<u>Jobs</u>	<u>Total Income (\$1,000)</u>	<u>Industrial Output (Sales/\$1,000)</u>
Agriculture	29,610	677,352	3,843,834
Mining	11	1,683	2,507
Construction	2,486	109,314	193,401
Manufacturing	3,481	210,597	631,294
Dairy Processing	16,762	1,366,408	8,571,647
TCPU*	4,321	344,252	637,563
Trade	18,863	931,785	1,305,853
FIRE**	5,123	509,343	742,858
Services	18,397	592,585	948,925
Government	630	36,736	85,101
Total	99,685	4,780,056	16,962,985
Implicit Multiplier	5.947	3.498	1.979
Wisconsin State Total	3,393,514	161,484,190	311,245,490
Percent of State Total	2.9%	3.0%	5.5%
Initial	16,762	1,366,408	8,571,647
Indirect	60,456	2,431,086	6,811,614
Induced	22,467	982,562	1,579,724
Total	99,685	4,780,056	16,962,985

* TCPU: Transportation, Communications, and Public Utilities

**FIRE: Finance, Insurance, and Real Estate

TABLE 3: Economic Impact, Dairy Combined, 1999 Wisconsin

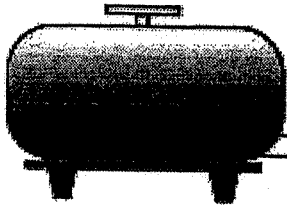
<i>Sector</i>	<i>Jobs</i>	<i>Total Income (\$1,000)</i>	<i>Industrial Output (Sales/\$1,000)</i>
Agriculture	88,422	797,278	3,959,781
Mining	15	2,186	3,260
Construction	3,622	159,378	280,958
Manufacturing	20,895	1,620,909	9,340,973
TCPU*	6,186	494,045	911,450
Trade	24,033	1,187,993	1,663,392
FIRE**	7,042	694,947	1,010,397
Services	22,728	735,102	1,179,628
Government	828	48,890	113,771
Total	173,770	5,740,729	18,463,609
Implicit Multiplier	2.159	3.008	1.576
Wisconsin State Total	3,393,514	161,484,190	311,245,490
Percent of State Total	5.1%	3.6%	5.9%
Initial	80,504	1,908,730	11,717,847
Indirect	63,599	2,534,594	4,668,158
Induced	29,666	1,297,405	2,077,604
Total	173,770	5,740,729	18,463,609

* TCPU: Transportation, Communications, and Public Utilities

**FIRE: Finance, Insurance, and Real Estate

TABLE 4: Federal, State and Local Tax Contribution of Wisconsin Dairying, 1999

<i>Type of Tax</i>	<i>On-Farm</i>	<i>Processing</i>	<i>Total</i>
		\$	
<i>Federal Taxes:</i>			
Business Income Taxes	\$28,480,574	\$121,914,651	\$150,395,225
Indirect Business Taxes	13,446,168	45,676,151	59,122,319
Payroll Taxes- Employee Contribution	54,996,037	174,329,838	229,325,875
Payroll Taxes - Employer Contribution	45,178,406	161,705,032	206,883,438
Personal Tax: Income Tax	98,122,526	301,942,421	400,064,947
Other Personal Taxes and Fees	1,143,088	3,517,508	4,660,596
Total Federal	\$241,366,798	\$809,085,602	\$1,050,452,400
<i>State/Local Taxes:</i>			
Business Income Taxes	\$5,694,808	\$24,377,335	\$30,072,142
Indirect Business Taxes	106,991,186	363,537,117	470,528,303
Payroll Taxes- Employee Contribution	250,560	896,817	1,147,377
Payroll Taxes - Employer Contribution	1,015,427	3,634,471	4,649,898
Motor Vehicle License Fees	1,226,473	3,787,951	5,014,424
Personal Property Taxes	714,511	2,229,264	2,943,774
Personal Income Taxes	33,815,383	104,438,485	138,253,868
Other Personal Taxes	8,600,599	26,804,536	35,405,134
Total State and Local	158,308,946	529,705,974	688,014,920
Grand Total	\$399,675,744	\$1,338,791,576	\$1,738,467,320



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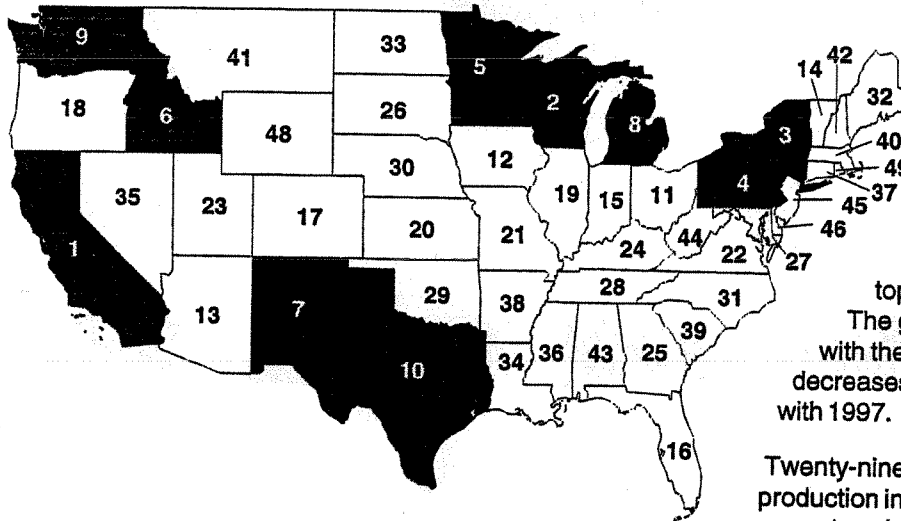
2002 Milk Production

U.S. milk production during 2002 increased 2.6% compared with 2001, climbing to a record 169.8 billion pounds. The 2002 total is 1.3% greater than the previous record of 167.6 billion pounds produced during 2000. Milk production has exceeded

year earlier levels during five of the last six years, with the lone exception occurring during 2001. Production in the U.S. has increased by 13.7 billion pounds over the past five years (2002 versus 1997), a gain of 8.8%.

Kansas, Alaska and Oregon recorded the largest annual percentage gains compared with 2001, with milk production increasing by 24.8, 23.1, and 21.9%, respectively. New Mexico (+13.6%), Arizona (+11.6%), Colorado (+9.6%), Idaho (+5.1%), and California (+5.0%) were the other states that registered annual milk production increases of 5.0% or more. Conversely, 6 states reported annual decreases of 5.0% or more, with South Dakota's 11.1% decrease being the largest milk production loss. Other states posting declines of more than 5% were North Dakota (-9.2%), Arkansas (-9.0%), Hawaii (-8.5%), Louisiana (-8.1%), and Alabama (-7.7%).

2002 Milk Production Ranking Top Ten States Highlighted



The map on this page ranks milk production by state for 2002, with the top ten milk producing states shaded. The graphics on page 4 depict the states with the largest percentage increases and decreases in milk production comparing 2002 with 1997.

Twenty-nine states registered annual milk production increases during 2002, with the percentage increases averaging 5.2%. Twenty states posted production decreases, with the percentage decreases averaging 4.0%. Nevada was the only state with 2002 milk production identical to 2001. Fourteen states recorded increases greater than 2.0%, while twelve states recorded milk production decreases of 2.0% or more during 2002.

Twenty-five states recorded milk production increases comparing 2002 with 1997. The average percentage increase for these states was 16.0%; however, only nine states posted increases larger than the 25-state percentage average. These nine were New Mexico (+57.5%), Idaho (+57.0%), Kansas (+56.4%), Oregon (+30.0%), Arizona (+28.7%), Colorado (+28.6%), California (+26.5%), Indiana (+18.8%), and Alaska (+17.9%). The only other states to post double digit increases compared with 1997 were Montana (+15.6%) and Nebraska (+12.5%).

Twenty-four states recorded production decreases between 1997 and 2002, with an average percentage decline of 15.6%. New Hampshire was the lone state to record identical milk production during 1997 and 2002. Twelve states recorded decreases greater than the average percentage loss. These were:

Arkansas	-38.1%	Alabama	-33.7%	Rhode Island	-28.2%	Louisiana	-26.8%
Mississippi	-24.6%	Wyoming	-24.3%	Hawaii	-21.3%	New Jersey	-21.1%
Tennessee	-18.3%	North Dakota	-18.0%	Missouri	-17.6%	Massachusetts	-16.8%

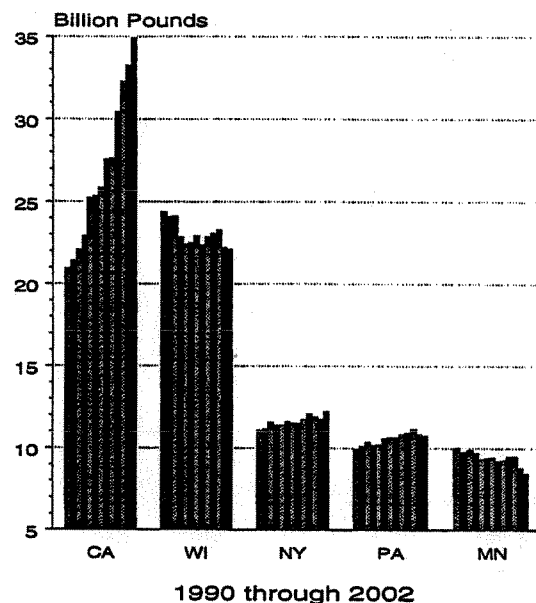


The graph at the right depicts annual milk production since 1990 for the nation's top five milk producing states. California (+5.0%) and New York (+3.7%) posted increases during 2002 compared with the previous year, while Wisconsin (-0.6%), Pennsylvania (-0.7%), and Minnesota (-4.0%) all registered production losses. California was the only state to record a production increase each year during this period—increasing production by 66.5% compared with 1990. New York (+10.4%) and Pennsylvania (+8.5%) also posted increases compared with 1990, while Wisconsin (-9.5%) and Minnesota (-15.7%) both recorded decreases in milk production during this time period.

The map on page 6 provides a ranking of states based on 2002 milk production per cow. California, Idaho, Michigan, New Mexico, and Washington are the only states ranked in the top ten in both total milk production and production per cow. California's 2002 per cow production of 21,180 pounds ranked fourth in the U.S., making it the only top five state with production per cow above the 2002 national average of 18,571 pounds. Pennsylvania's 18,419 pounds per cow production fell just short of the national milk per cow average.

Annual Milk Production

Top Five Dairy States



2002 Per Capita Milk Production

Per capita milk production is a data series presented annually in this Bulletin. A comparison of this series to per capita consumption data may reflect the aggregate supply and demand balance for individual states and regions throughout the U.S. The table on page 7 details and compares per capita milk production by state for 2002, 2001, and 1997. This table lists the states in descending order based on 2002 per capita production. The states with per capita production of more than 600 pounds are inside the shaded area of the table. Six of the top ten states in total production are also in the top ten in per capita production. These six are California, Idaho, Minnesota, New Mexico, Washington, and Wisconsin.

Data used in these calculations indicates that per capita production for 2002 was up 8.7 pounds (+1.5%) compared with 2001. Twenty-three states reported annual per capita increases during 2002, the largest being Kansas with a gain of 24.2%. Alaska (+21.2%), Oregon (+20.2%), New Mexico (+12.1%), Arizona (+8.5%), and Colorado (+7.8%) were the only other states with increases of five percent or greater. South Dakota recorded the largest per capita production decline during 2002, with a loss of 11.5%. Hawaii (-9.8%), Arkansas (-9.5%), North Dakota (-8.8%), Louisiana (-8.3%), Alabama (-8.0%), and Florida (-5.2%) were the other states with decreases of five percent or more compared with 2001.

Per capita production for the U.S. increased by 5.7 pounds, or +1.0%, between 1997 and 2002. Fourteen states recorded increases in per capita milk production, led by Kansas's gain of 49.8%. New Mexico (+46.3%), Idaho (+41.6%), Oregon (+19.7%), California (+15.9%), Indiana (+13.2%), Montana (+11.7%), Alaska (+11.6%), and Colorado (+11.1%) were the other states to post per capita increases of ten percent or more comparing 2002 with 1997. Arkansas, Alabama, and Rhode Island recorded the largest decreases, with per capita production falling by 42.4, 36.2, and 33.8%, respectively. Ten additional states posted declines of more than 20%, while 9 states reported decreases between 10 and 20%.

The map on the top of page 3 depicts per capita milk production by state for 2002. The 300 and 600 pound levels of per capita production are arbitrary divisions selected for this map. These levels reflect average annual fluid and total per capita dairy consumption, plus reserve requirements. A cursory analysis of regional milk supply conditions can be performed by examining the shading patterns prevalent in the individual regions.

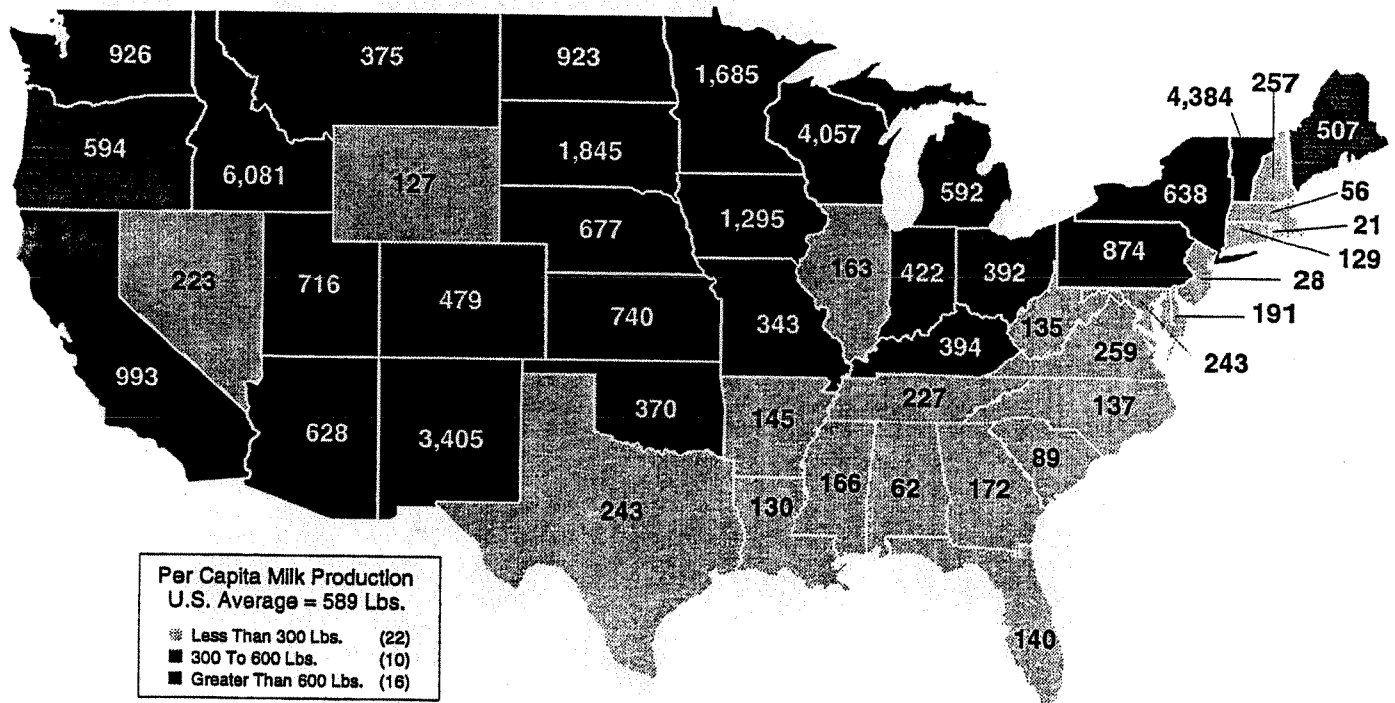
The map at the bottom of page 3 displays the percentage change in per capita milk production by state between 1997 and 2002. The data represented by this map reflects changes in production combined with population changes. The graphics on page 5 depict the states with the largest percentage increases and decreases from 1997 to 2002.

The graph on page 6 provides a ranking of the top five milk producing states in total milk production, production per cow, and production per capita. The graph on the last page of this Bulletin depicts milk production per capita for the U.S. over the last 23 years.

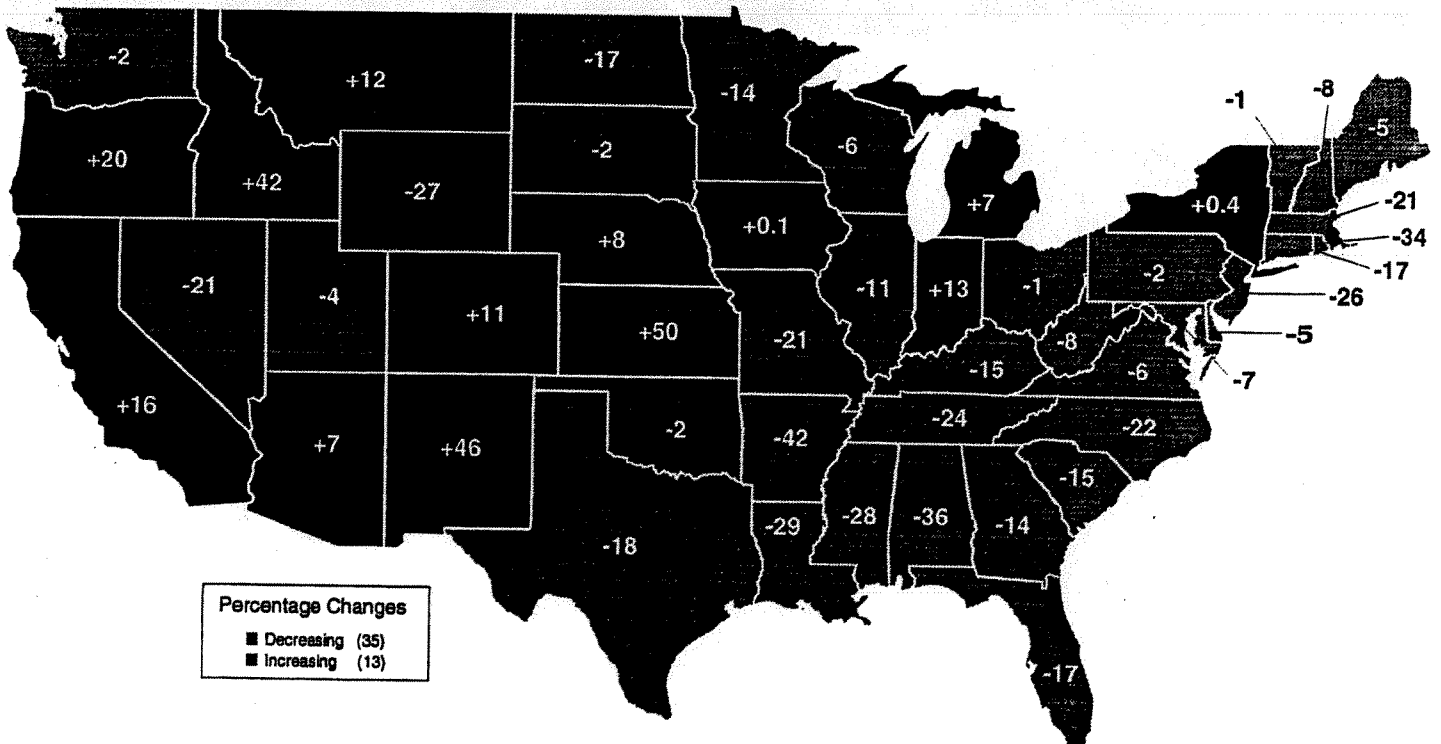
Percentage Of 2002 U.S. Totals

	Milk Production	Population
California	20.55	12.18
Wisconsin	13.00	1.89
New York	7.20	6.64
Pennsylvania	6.35	4.28
Minnesota	4.98	1.74
5-State Total	52.08	26.73

2002 Per Capita Milk Production



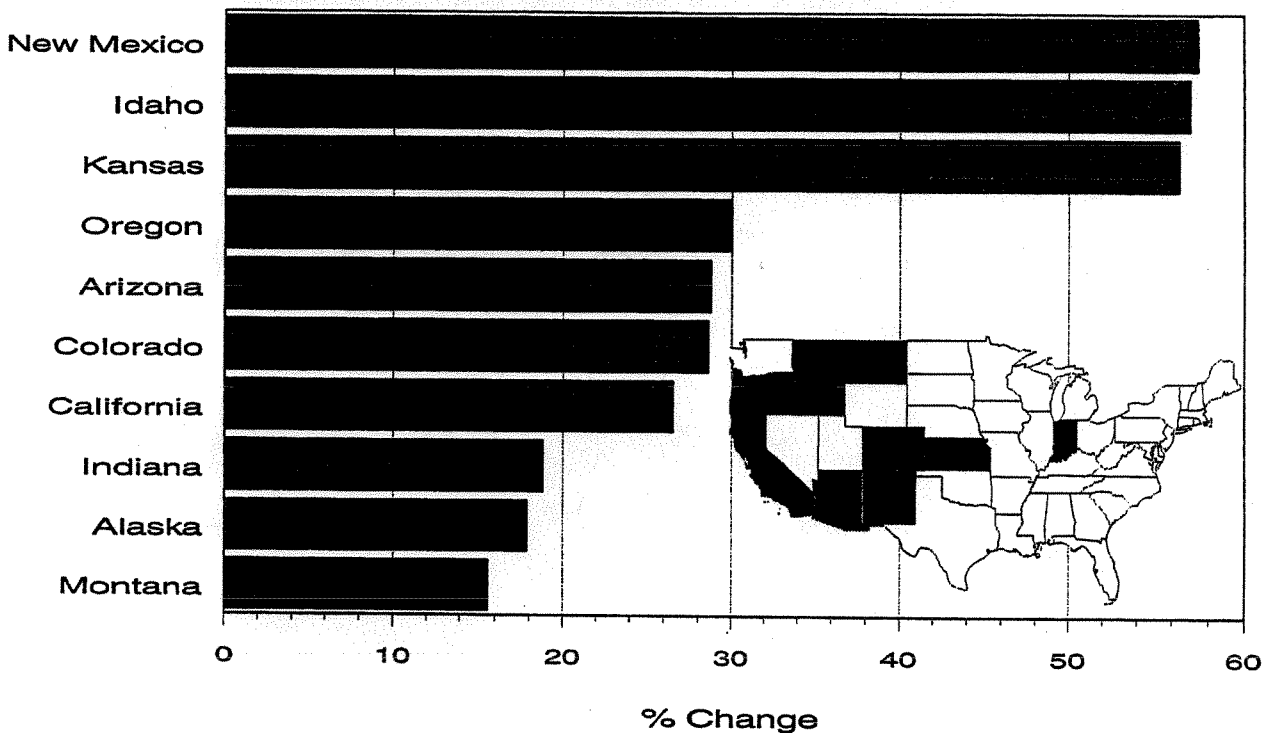
Percent Change In Per Capita Milk Production 2002 vs 1997



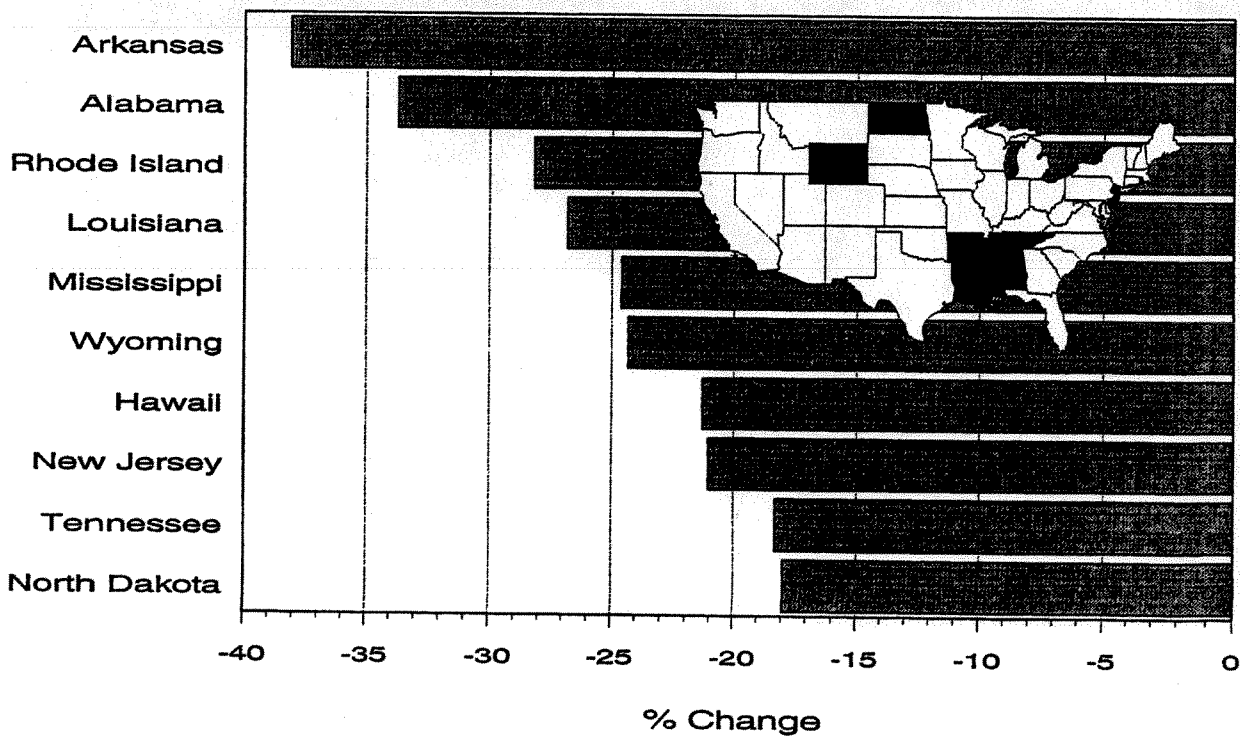
U.S. Milk Production: 2002 vs 1997

U.S. Average = +8.8%

Largest Production Increases



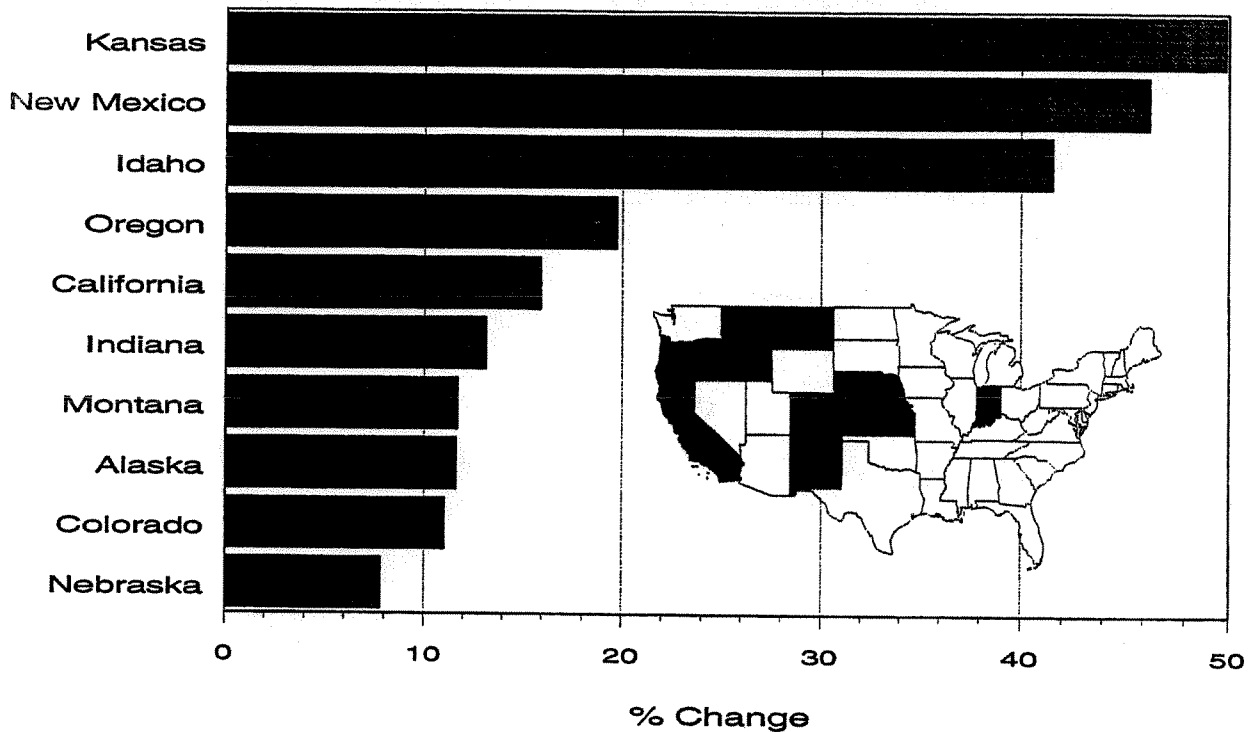
Largest Production Decreases



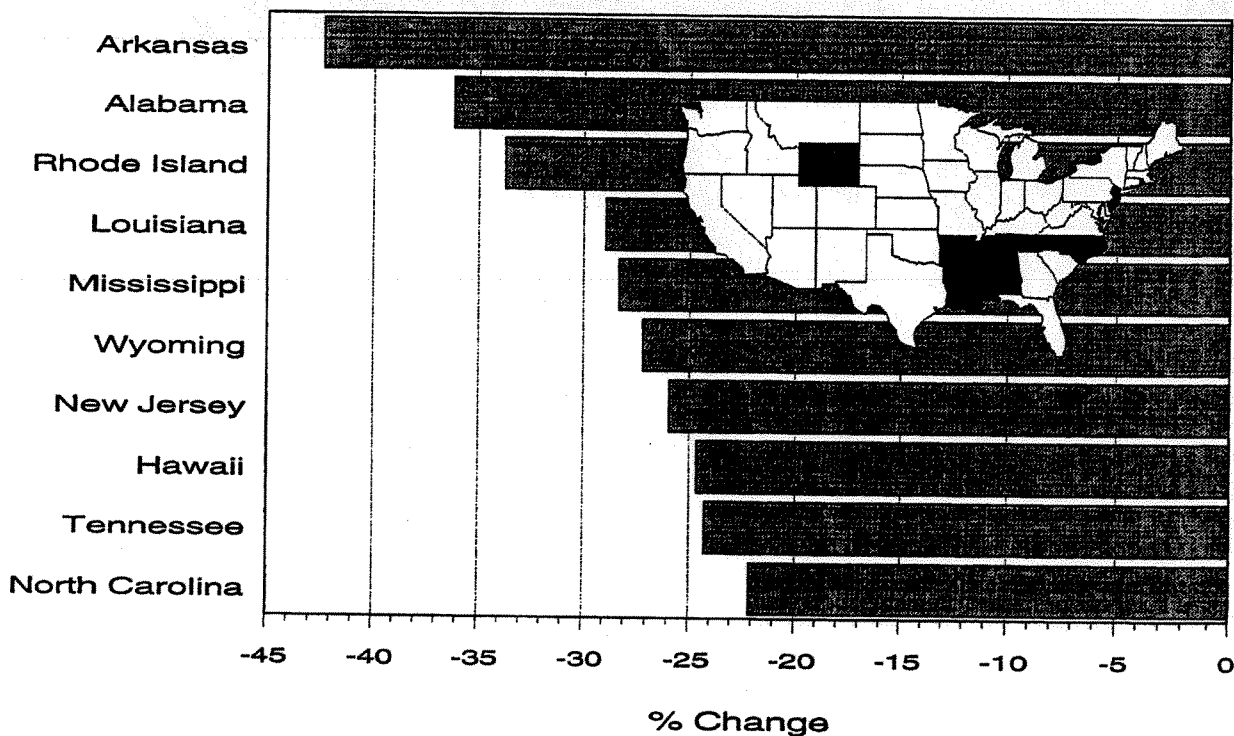
U.S. Per Capita Milk Production: 2002 vs 1997

U.S. Average = +1.0%

Largest Per Capita Increases

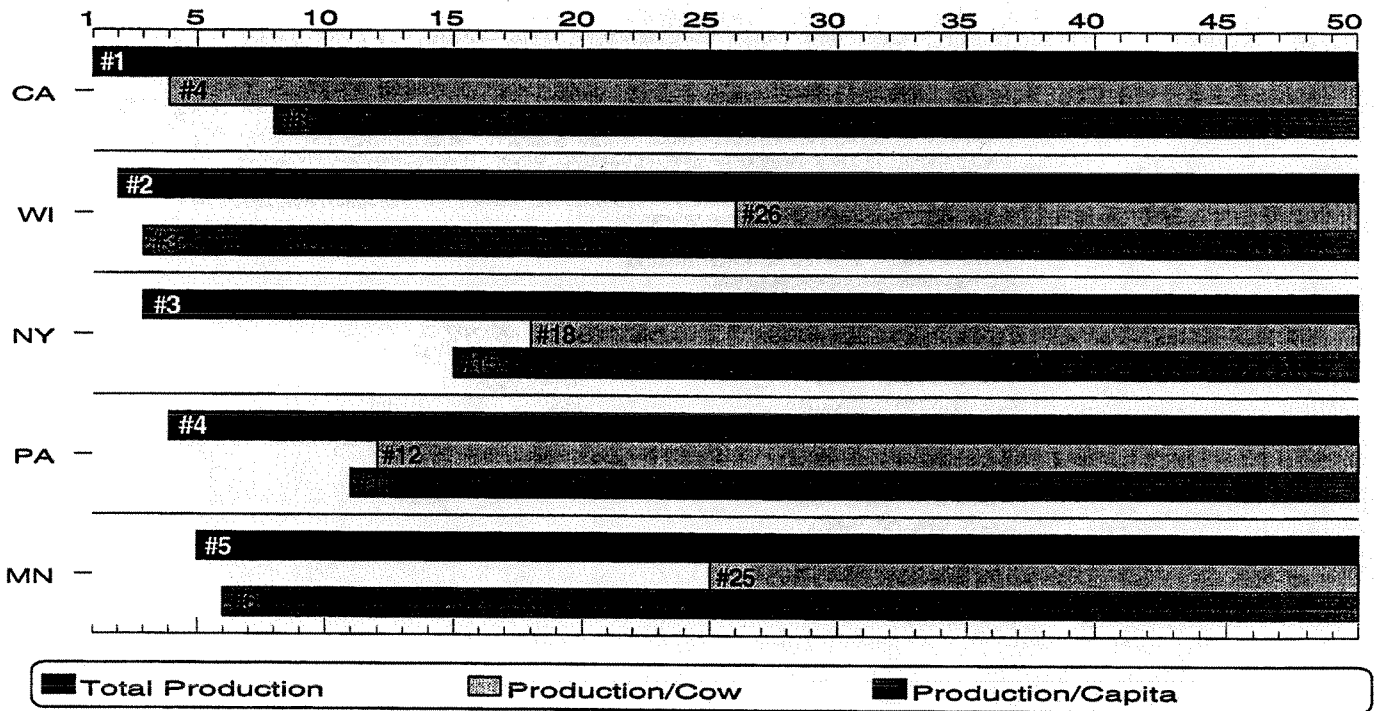


Largest Per Capita Decreases

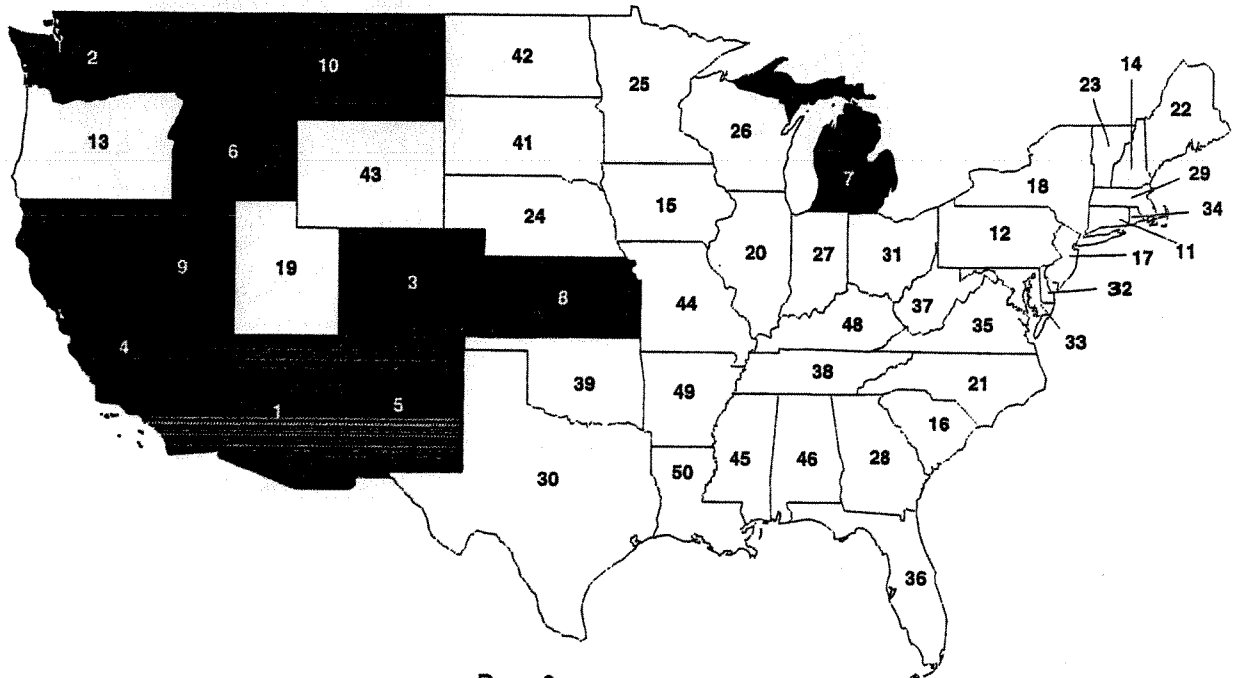


2002 Milk Production - Top 5 States

State Rankings



2002 Milk Production Per Cow Ranking Top Ten States Highlighted



Per Capita Milk Production

2002 versus 2001 & 1997 - By State

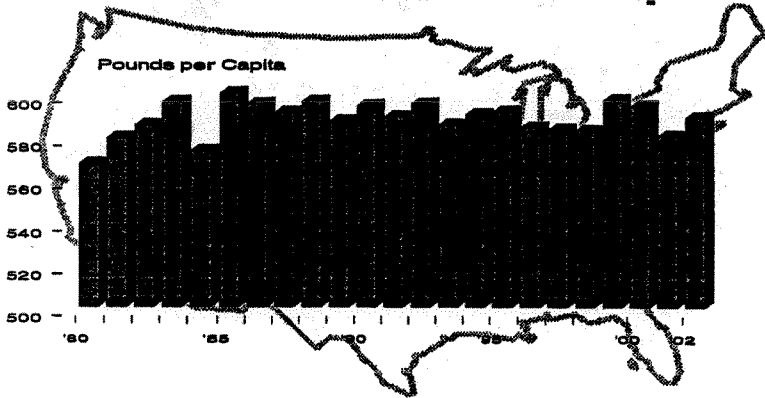
States	Per Capita Milk Production			Change In Per Capita Milk Production			
	2002	2001	1997	2002 vs 2001		2002 vs 1997	
				Pounds	Percent	Pounds	Percent
1 Idaho	6,080.7	5,873.9	4,295.8	206.8	3.5	1,784.9	41.6
2 Vermont	4,383.8	4,354.2	4,417.0	29.6	0.7	(33.2)	(0.8)
3 Wisconsin	4,056.8	4,106.4	4,300.5	(49.6)	(1.2)	(243.7)	(5.7)
4 New Mexico	3,404.7	3,037.2	2,326.6	367.5	12.1	1,078.1	46.3
5 South Dakota	1,844.8	2,083.5	1,876.0	(238.8)	(11.5)	(31.2)	(1.7)
6 Minnesota	1,685.0	1,767.9	1,964.8	(82.9)	(4.7)	(279.9)	(14.2)
7 Iowa	1,295.3	1,290.9	1,293.8	4.4	0.3	1.5	0.1
8 California	993.4	960.0	857.1	33.4	3.5	136.3	15.9
9 Washington	926.0	920.0	944.9	6.0	0.7	(18.9)	(2.0)
10 North Dakota	922.6	1,011.7	1,112.4	(89.2)	(8.8)	(189.8)	(17.1)
11 Pennsylvania	873.5	881.8	887.7	(8.3)	(0.9)	(14.1)	(1.6)
12 Kansas	740.1	595.8	494.0	144.3	24.2	246.1	49.8
13 Utah	716.2	717.5	745.8	(1.3)	(0.2)	(29.5)	(4.0)
14 Nebraska	676.6	677.9	627.6	(1.3)	(0.2)	49.0	7.8
15 New York	637.7	617.3	635.4	20.5	3.3	2.3	0.4
16 Arizona	628.4	579.1	585.1	49.4	8.5	43.4	7.4
17 Oregon	594.3	494.3	496.4	100.0	20.2	97.9	19.7
18 Michigan	591.5	586.6	553.2	4.9	0.8	38.3	6.9
19 Maine	506.8	509.2	533.1	(2.4)	(0.5)	(26.3)	(4.9)
20 Colorado	479.1	444.6	431.4	34.5	7.8	47.7	11.1
21 Indiana	422.3	419.0	373.2	3.3	0.8	49.1	13.1
22 Kentucky	394.3	408.0	464.2	(13.6)	(3.3)	(69.8)	(15.0)
23 Ohio	391.8	377.1	394.4	14.7	3.9	(2.6)	(0.7)
24 Montana	375.0	382.2	335.7	(7.2)	(1.9)	39.2	11.7
25 Oklahoma	370.4	372.7	376.0	(2.3)	(0.6)	(5.6)	(1.5)
26 Missouri	343.1	345.7	436.7	(2.7)	(0.8)	(93.7)	(21.4)
27 Virginia	259.3	261.9	275.8	(2.7)	(1.0)	(16.5)	(6.0)
28 New Hampshire	257.2	255.7	279.8	1.6	0.6	(22.6)	(8.1)
29 Texas	243.3	238.9	297.5	4.4	1.9	(54.2)	(18.2)
30 Maryland	243.1	240.2	260.3	2.9	1.2	(17.1)	(6.6)
31 Tennessee	226.8	232.2	299.5	(5.4)	(2.3)	(72.7)	(24.3)
32 Nevada	223.1	231.2	284.1	(8.1)	(3.5)	(61.0)	(21.5)
33 Delaware	190.7	188.3	201.3	2.4	1.3	(10.6)	(5.3)
34 Georgia	171.7	170.5	198.7	1.2	0.7	(26.9)	(13.6)
35 Mississippi	166.4	173.8	232.1	(7.3)	(4.2)	(65.6)	(28.3)
36 Illinois	162.8	161.3	183.7	1.4	0.9	(21.0)	(11.4)
37 Arkansas	145.0	160.3	251.7	(15.3)	(9.5)	(106.7)	(42.4)
38 Florida	139.5	147.3	168.7	(7.7)	(5.2)	(29.2)	(17.3)
39 North Carolina	136.7	140.6	175.5	(4.0)	(2.8)	(38.8)	(22.1)
40 West Virginia	134.9	138.3	146.5	(3.4)	(2.5)	(11.7)	(8.0)
41 Louisiana	129.6	141.4	182.4	(11.8)	(8.3)	(52.8)	(28.9)
42 Connecticut	129.2	132.8	155.8	(3.6)	(2.7)	(26.6)	(17.1)
43 Wyoming	127.1	127.6	174.6	(0.5)	(0.4)	(47.4)	(27.2)
44 South Carolina	88.6	90.3	104.8	(1.7)	(1.9)	(16.2)	(15.4)
45 Hawaii	77.8	86.2	103.2	(8.5)	(9.8)	(25.4)	(24.6)
46 Alabama	61.7	67.1	96.7	(5.4)	(8.0)	(35.0)	(36.2)
47 Massachusetts	56.2	55.8	71.0	0.4	0.7	(14.8)	(20.9)
48 New Jersey	27.5	27.4	37.1	0.1	0.4	(9.6)	(26.0)
49 Alaska	27.5	22.7	24.6	4.8	21.2	2.9	11.6
50 Rhode Island	21.4	21.9	32.3	(0.5)	(2.2)	(10.9)	(33.7)
U.S. Totals	588.7	580.0	583.0	8.7	1.5	5.7	1.0

Data Sources:

Milk Production : Milk Production, February 2003, National Agricultural Statistics Service, Agriculture Statistics Board, USDA.
 Population : U.S. Census Bureau, Department of Commerce. (July 1st population estimates for each year.)

	Statistical Uniform Price		Producer Price Differential		Class I Utilization	
	1/2003	12/2002	1/2003	12/2002	1/2003	12/2002
Pacific Northwest	10.76	10.81	0.98	1.07	30.46	27.45
Western	10.49	10.50	0.71	0.76	18.74	22.94
Arizona-Las Vegas	10.97	11.07	---	---	32.36	32.53
Central	10.67	10.67	0.89	0.93	26.07	25.33
Southwest	11.88	11.92	2.10	2.18	44.31	42.26
Upper Midwest	10.36	10.33	0.58	0.59	19.63	18.79
Southeast	12.68	12.76	---	---	64.29	64.98
Mideast	11.05	11.12	1.27	1.38	40.77	40.39
Appalachian	12.94	12.96	---	---	71.39	67.20
Northeast	12.19	12.24	2.41	2.50	45.28	44.61
Florida	14.18	14.15	---	---	88.91	84.62

U.S. Milk Production Per Capita



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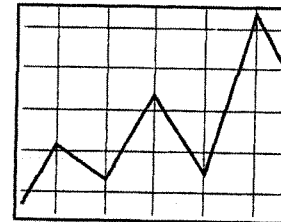
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MARKETING AND POLICY BRIEFING PAPER



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Paper No. 78A
May 2002

RETHINKING DAIRYLAND: BACKGROUND FOR DECISIONS ABOUT WISCONSIN'S DAIRY INDUSTRY

College of Agricultural and Life Sciences
University of Wisconsin-Madison

Preface

This is the first in a series of brief reports that document the current state of the Wisconsin dairy industry and evaluate factors that will influence its evolution. The series is intended to address a growing concern among Wisconsin dairy industry leaders about the viability of Wisconsin dairying. The concern can be summarized as follows: Wisconsin milk cow numbers have fallen sharply over the last 15 years and, despite increasing milk production per cow, total state milk production has been flat to decreasing since 1988. While Wisconsin milk production has languished, U.S. milk utilization, especially cheese consumption, have shown very strong growth. Despite paying higher prices for cheese milk than plants in the West, where milk production is escalating, Wisconsin cheese makers are finding it increasingly difficult to fill their vats. Some cheese manufacturers have relocated or expanded their operations to regions with an expanding and less expensive milk supply and others have threatened to do so. A significant loss of processing capacity could threaten the entire dairy infrastructure.

Enhancing the viability of Wisconsin dairying requires an aggressive collaborative effort among and between industry participants and state government. The university's role in this process – and the purpose of this series – is to promote a clear and common understanding of the challenges and opportunities involved.

The first report in the series outlines the general scope of the Wisconsin dairy industry and documents its contributions to the overall state economy. Subsequent reports to be issued over the next several months will focus on more specific issues related to competitiveness.

Wisconsin's Dairy Industry Today¹

Historical Overview²

In the 50 years between 1875 and 1925, a number of events led to the emergence of Wisconsin as the unchallenged dairy state. Early in this period, the cinch bug, the opening of land in the west, and the vision of an aggressive and articulate small town newspaper editor were key elements in the emergence of Wisconsin dairying.

Before 1875, agriculture in Wisconsin was small in scope and subsistence in nature. The exception was commercial wheat production, which totaled 25-30 million bushels between 1856 and 1872, placing Wisconsin among the top wheat states in the union.³ But growing wheat without fertilizer quickly depleted soils. So farmers moved further and further north to find virgin ground to cultivate. As they did, they incurred shorter growing seasons, increasing cinch bug infestations, and sharply lower yields. It became more profitable to grow wheat in Minnesota and the Dakotas, leaving abandoned, worn out farms in Wisconsin.

The newspaper editor was W.D. Hoard, who began preaching the gospel of dairying as the salvation of agriculture in Wisconsin from the pulpit of his *Jefferson County Union* and later his nationally distributed *Hoard's Dairyman*. Hoard traveled extensively throughout the state, promoting modern feeding and breeding methods and supporting collective marketing efforts of dairy farmers.

Hoard's ideas caught on, but nascent dairy farmers were faced with numerous production and marketing constraints. Chief among these were milk quality and herd health. These problems were effectively addressed by pioneer University of Wisconsin College of Agriculture faculty. Stephen Babcock's butterfat test (1890) allowed cheese and butter plants to price milk in reference to its value in products, and encouraged farmers to adopt better feeding and breeding practices. H.L. Henry brought sound science to the eventually successful battle against bovine tuberculosis. W.A. Henry conducted research that demonstrated the profitability of balanced dairy rations. F.H. King was instrumental in promoting the use of silos for winter feed storage. Benjamin Hibbard assisted in the creation of scores of dairy cooperatives to efficiently process and market milk.

In the early 1900's the University, especially its Agricultural Extension Service, took on the challenge of expanding dairying to the despoiled, cut-over lands of northern Wisconsin. University specialists developed and demonstrated effective land-clearing

¹ Authored by Ed Jesse, Professor and Extension Marketing Specialist, Department of Agricultural and Applied Economics, University of Wisconsin-Madison/Extension

² This section draws heavily from *Wisconsin: A Guide to the Badger State*, New York: Duell, Sloan and Pearce, 1941, and Osman, Loren H., *W.D. Hoard: A Man for the Time*, Fort Atkinson: W.D. Hoard and Sons Company, 1985.

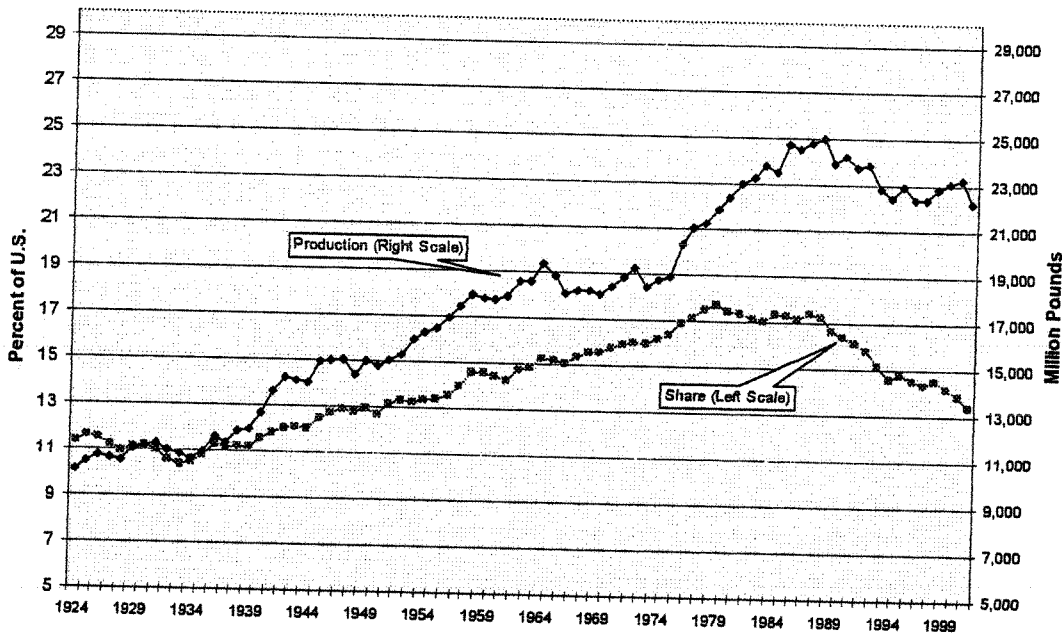
³ By comparison, Wisconsin produced 8.7 million bushels of wheat in 2000.

techniques, cropping systems, and feeding and management practices tailored to conditions in the north.

By 1925, dairy had reached the number 1 rank among commodity values in the state. Nearly 2 million Wisconsin dairy cows produced 10.6 billion pounds of milk that year. Wisconsin had long surpassed New York as the leading dairy, and accounted for 11.6 percent of U.S. milk production.

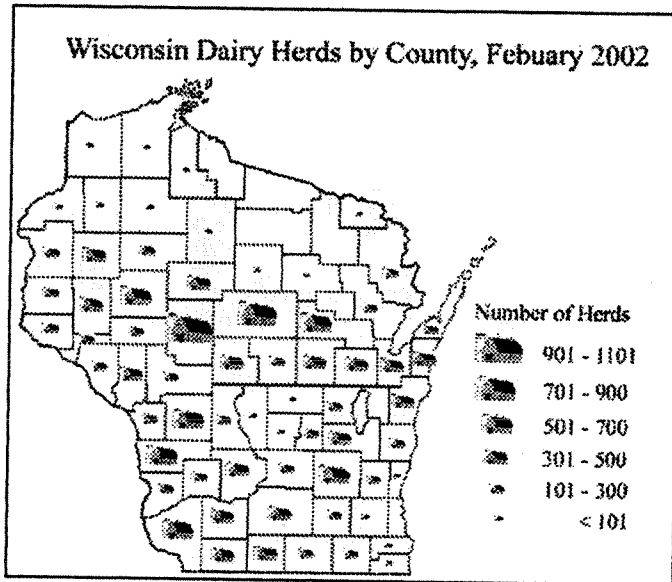
Both milk production and market share grew steadily for the next fifty years. In 1979, Wisconsin's share of U.S. milk production peaked at 17.7 percent, and then declined as milk production in the west mushroomed. Despite the fall-off in market share, milk production in Wisconsin continued to grow rapidly after 1979, peaking at 25 billion pounds in 1988. Since then, production has ranged between 22 and 24 billion pounds.

**Wisconsin Milk Production:
Total and Share of U.S.**



Wisconsin Dairy Farming in 2002

As of February 2002, there were 17,711 dairy farms in Wisconsin milking about 1.3 million cows. Dairying is widespread within the state – all but two counties (Vilas and Menominee) reported dairy farms in 2002. The top five dairy counties as measured by number of dairy herds were Clark, Marathon, Grant, Vernon and Chippewa, accounting for just over one-fifth of the state's herds (Appendix Table 1).



Eighty-five percent of Wisconsin dairy herds shipped Grade A milk in February 2002. There are nearly 3,000 Grade B herds, a number that has remained fairly constant in recent years. Grade B herds are concentrated in Western and North Central Wisconsin and in Green County. About 20 percent of Grade B producers cool and deliver milk in cans. This segment of the industry consists largely of Amish farmers whose religious beliefs forbid the use of electric-powered bulk cooling tanks.

Milk cow and milk production data by county are only available through 2000 (Appendix Tables 2 and 3). The latest dairy cow count shows a geographical pattern very similar to the 2002 herd data. However, the *density* of dairy farms or dairy cows (measured as the number of farms or cows per square mile) shows a somewhat different picture. The highest concentration of cows is in the East Central part of the state near Lake Winnebago and, to a lesser

