

U.S. Top Dairies: Benchmarks for Success

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The year 2000 will be a low milk price year for dairy producers. Barring a serious natural disaster such as widespread flooding or drought, we cannot expect the average level of prices at the farm to be much better than \$1.75-\$2.00 per hundredweight below the levels of 1999. For many dairy producers this is a sobering prospect. For others, the market correction has been well anticipated and, while it may dampen their short-term outlook, they will not take their eyes off of their long-term goals. 1997 was a similar year for producers and it was the year that a new initiative called the *U.S. Top Dairies Program* was launched.

A handful of producers in the Northeast were asking questions about the lowest cost region of the country to locate a dairy farm. They had witnessed the tremendous growth of milk production in the western states and were wondering if Idaho or New Mexico was the dairy area of the future. They were further questioning whether they should relocate in one of the currently growing regions. It is useful to examine the reasons behind the growth in the western states as well as to look carefully at the actual returns from dairies across the country, before making such a critical decision.

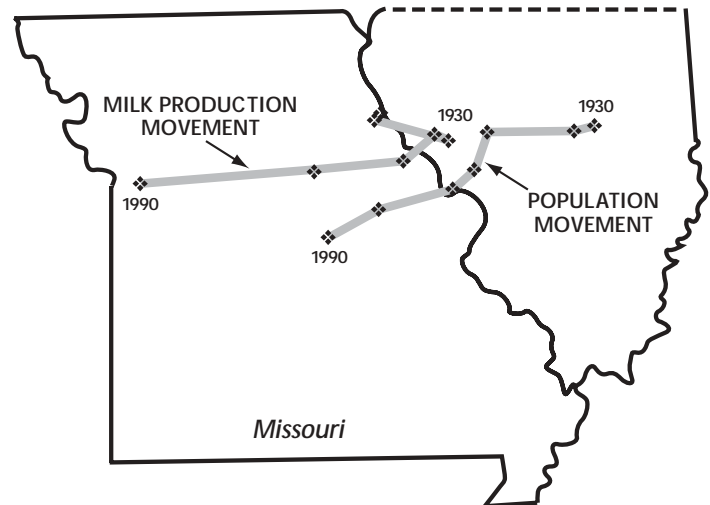
The Growth of Western Milk Supplies

One hundred years ago, New York was the top milk producing state. Around 1914, Wisconsin surpassed New York and held the lead by a wide margin for the next eighty years. In 1994 California surpassed Wisconsin to become our number one milk producing state. There have been many reasons for the increase milk production in California, but one of the biggest has been a rapidly growing market.

A "centroid" is a geographically weighted average number. If you visualize the United States as a cut-out on a two dimensional surface, or platter, with people stacked up as weights where they actually live, the centroid would be the balancing point of that plane. That point has been moving south and west for many years. The corresponding centroid of milk production has always been located to the northwest of the population, but it has followed population in quite a parallel fashion—milk supplies have grown where there was a local population to demand dairy products. The figure in the next column gives some idea of the relationship between the centroid movements.

A first lesson to be learned is that it is advantageous to be near your markets. A closer examination of the centroid movements does reveal that in the past two decades, the milk production centroid has outpaced the population movement to the west. There could be several

plausible reasons for this: there are agronomic resources (climate and soils) better suited to milk production in the West, the momentum of historic production decisions has carried production past it's equilibrium, or that the efficiency of our food distribution system has reduced costs to the point that it really doesn't make much difference where products are produced. Perhaps there is a bit of truth in each of those possibilities.



The West certainly has excellent agronomic resources. California is an enormous garden and looks as though anything that is watered can be grown somewhere in the state. Alfalfa is no exception. The quality of that forage may be equaled, but it is not surpassed anywhere, and the irrigated yields are tremendous. That being said, I don't believe that the soils and climate are the overriding reasons for the phenomenal growth of milk production.

Historic production decisions have played a role in California's rise to the top. In the 1920 to 30s the 40 quart can was being widely embraced as a universal standard for shipping milk to the market. During that same time, the dairy industry in California was experimenting with bulk tanks. The new and larger dairy farms that were being built to supply the growing demand in San Francisco and Los Angeles really could justify the single large expense of on-farm cooler technology. The 10 to 30 cow operations that were a standard in Wisconsin at the time could not. It would be another thirty years before herd sizes in other parts of the country were large enough to move up to a bulk tank. The bulk tank was a pivotal technology in the evolution of the dairy industry and its early adoption by western dairy farms helped to accelerate the growth in that region.

One hundred years ago, raw milk was being shipped by train as far as 400 miles into the metropolitan areas of the Northeast and butter and cheese was coming in from

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the Midwest. The technology of transportation and the distribution of finished products nowadays is truly amazing. A pound of cheese or butter can be sent from California to New York for as little as five cents. Local production is not as important as it once was leaving dairy producers free to consider exactly where the lowest cost of milk production might really be achieved.

Regional Costs of Production

Many Land Grant Universities have collected and summarized costs of production over the years. For example, Cornell University has had the Dairy Farm Business Summary (DFBS) project for more than fifty years. These efforts have provided invaluable benchmarks for dairy producers to examine their own operations. As useful as the DFBS has been, it was inadequate to answer the questions that many of the producers in New York were asking. If it only cost 5 to 7 cents per pound to ship cheese from one end of the country to the other then theoretically, milk prices in California and New York might only differ by 50 to 70 cents per hundredweight (100 pounds of milk can be transformed into about 10 pounds of cheese). The potentially small difference in milk prices liberates producers from the observation that you need to be close to your market and it also makes you aware that your competition may not be limited to your New York neighbors.

The USDA's estimates of regional costs of production provide a starting point for assessing your competition. The surveys of milk producers used to compile these data are meant to be statistically valid and represent the general population in the region. Because of the ten-fold difference in average farm size between the northeast and western regions, a statistically valid comparison is not really a meaningful comparison of the achievable differences in costs of production. The returns-to-scale on dairy farms is substantial and we should be comparing "apples to apples". The New York DFBS in general represents larger-than-average farms and the dataset can be queried for farms in a particular size range. However, not every state has a DFBS program and the data that are available have been collected and reported in different ways. The only truly valid comparison would be a collection and summarization of original data.

The first *U.S. Top Dairies* program was an attempt to look at "best practice" farms in all of the major dairy regions of the country. Academics, dairy cooperatives, processors and regulatory agencies were asked to nominate "best practice" dairy operations in their region of the country. The selection was not necessarily to be the largest farms, but rather farms likely to be the low cost producers in each area. Those dairy producers were sent letters of invitation to complete a financial survey, modeled after the New York DFBS, and in August of 1997 the results would be

shared among this group at a meeting in Orlando, Florida. Approximately 100 producers from all over the country accepted that invitation.

Tables at the end of paper (tables 1 to 9) summarize data that was collected. Because there were too few observations to make state-by-state comparisons, a geographic separation was made between "Eastern" and "Western" operations. Rather than being any strict definition of geography, the sample data presented themselves with no observations from a line running roughly from North Dakota to Louisiana. The financial performance summary is shown with five different methods of comparison. The "average" column is the simple average of all observations in the data. The "eastern" and "western" columns are the average of the farms in regions described above. And, the "Top 5" farms represent the average values of the five most profitable farms as determined by the highest rate of return on assets in the two geographic separations. These two regions of the country make an interesting cleavage of the sample because of the predominance of different farming systems in each area. Many interesting observations can be drawn from the summary. Although the farms represented covered quite a range in size, they were on average very large farms. The western farms averaged more than twice as many cows as the eastern operations but the eastern farms averaged more than six times the total crop acres. The two groups also had statistically different milk yields with the eastern farms averaging 22,588 and the western producers averaging 19,390 pounds per cow per year. Although the profile of income and expenses differed quite a bit between these two groups, the net farm income was almost identical with eastern farms averaging \$218,936 and western farms averaging \$206,928.

A perception of many people is that farms in the east have a much higher milk price while western farms enjoy lower costs of production. Both of these dogmas were challenged by the data. Eastern farms did have a higher milk price averaging \$14.84 than the western farms at \$14.06, but the difference was not as large as many people suspect. The notion of lower costs of production in the West was truly challenged. A buildup of the operating, or cash cost per hundredweight revealed that eastern farms spent \$12.09 while the western farms spent \$12.51 in that year. This meant that the margin, or net return over operating costs, was \$1.55 for the western farms and \$2.75 for the eastern farms. Smaller margins on the western farms, but coupled with their larger farm size yielded nearly identical net farm incomes.

The Evolution of U.S. Top Dairies

The first *Top Dairies* workshop gathered financial data with a mail-in survey. Producers at that workshop had asked if the one-month turn around between submission of data and reporting could be shortened. Technology has

made their requests possible. Annual farm data can be collected remotely using the internet and a farm summary is instantly generated. Moreover, all farms can participate and they can examine their businesses in ways that were never before possible. They can remotely query the database of financial submissions to generate benchmarks of their own design. For example, a farm may wish to look at operations of a similar size in their region of the country. They might wish to further constrain the request to Jersey herds with a substantial portion of forage consumption through grazing. If at least three records meet their request, a report is generated that compares their farm with the query of the database. Farms can also look at operations with high rates of returns on assets and see what business practices are consistent with high profit levels. A thorough examination of your own operation's strengths and weaknesses is possible. Scatterplots with hundreds of combinations of variables can also be generated showing your farm relative to all others in the database. Users can be assured that this is a highly secured web site and that all individual information is held in strictest confidence. You cannot view individual data other than your own.

This year, more than 500 farms from across the country have submitted their data. Every entry is screened to ensure that the data collected is of high quality. The real strength of this approach is in the interrogation of the data for suitable benchmarks for an individual farm to measure performance. But it is also possible to generate summaries that provide insights into farms grouped by different categories. A second set of tables (tables 10 to 12) follows which looks at the 1999 data and summarizes financial performance by herd size and by purchased versus grown feed.

The Future of U.S. Top Dairies

The U.S. Top Dairies program is a grass roots effort and is growing rapidly. Academics from different disciplines-Animal Science as well as Agricultural Economics-across the country are working with consultants and other industry representatives to encourage producers to become involved. It is not possible to know where you are going if you don't know where you are. A financial "benchmark" tells you exactly where you stand relative to your competition and can point you in the direction of your next step. For some, the next step may be relocation or a satellite expansion in a different part of the country. For others, it may be a move toward grazing or more simply the awareness of a need to trim costs out of a particular expense category such as concentrate purchases or machinery repairs.

The second workshop, *U.S. Top Dairies-2000*, was held this fall. Participants from across the country again gathered to exchange ideas about best practices on dairy farms with an eye toward the bottom line. Individual producers may be unable to substantially alter the price that they receive for milk, but they are in control of their costs of production. Milk is profitably produced in all fifty of the United States. Understanding how the top dairies in each region have achieved high profits may help anyone become a more profitable producer. Please feel free to visit and use the U.S. Top Dairies web site located at <http://cpdmp.cornell.edu/topdairies> and click "go to the on-line data entry and query page" at the bottom. Participants who submit data have unlimited access to database queries for the year(s) in which they have submitted data. Guests can have limited access to queries from earlier submissions.

Table 1. Descriptive Statistics

Values for 1996	Average	Western	Eastern	Western Top 5	Eastern Top 5
Cows	980	1419	655	1214	629
Heifers	510	615	432	517	461
Percent custom raised	18%	20%	17%	31%	14%
Milk sold per dairy	20,168,780	27,654,684	14,630,333	22,026,043	14,078,959
Milk sold per cow	21,228	19,390	22,588	19,628	22,567
Milk sold per worker	1,291,990	1,637,631	1,035,959	1,688,509	1,062,397
Cows per worker	63	86	46	89	46
Total crop acres per cow	0.99	0.24	1.55	0.00	1.59
Crop acres	608	151	946	2	1005
Acres owned	419	132	632	0	583
Acres rented	341	45	561	2	697

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Table 2. Receipts, Expenses, Net Farm Income, and Return on Assets					
Values for 1996	Average	Western	Eastern	Western Top 5	Eastern Top 5
Receipts					
Milk	\$2,819,110	\$3,932,417	\$2,076,905	\$3,321,184	\$2,141,690
Dairy cattle	\$106,016	\$133,536	\$87,669	\$95,847	\$51,855
Dairy calves	\$21,543	\$26,853	\$18,003	\$8,041	\$8,924
Other livestock	\$13,746	\$27,055	\$4,873	\$27,315	\$9,281
Crops	\$35,892	\$14,896	\$49,888	\$0	\$28,684
Custom machine work	\$3,221	\$43	\$5,339	\$0	\$2,161
Government receipts	\$10,016	\$4,526	\$13,676	\$0	\$19,241
Other receipts	\$48,392	\$44,948	\$50,687	\$25,052	\$194,568
Total receipts	\$3,057,935	\$4,184,274	\$2,307,042	\$3,477,439	\$2,456,406
Expenses					
Hired labor	\$365,814	\$398,866	\$343,779	\$251,858	\$353,974
Dairy grain & concentrate	\$835,212	\$1,262,251	\$550,519	\$1,096,738	\$565,321
Dairy roughage	\$289,990	\$642,444	\$55,021	\$457,483	\$11,020
Nondairy feed	\$50,694	\$50,687	\$50,699	\$0	\$0
Machinery hire, rent & lease	\$33,470	\$30,865	\$35,207	\$15,848	\$39,248
Machinery repairs	\$75,917	\$72,707	\$78,058	\$73,407	\$89,372
Fuel, oil & grease	\$32,251	\$30,081	\$33,698	\$24,779	\$29,217
Replacement livestock	\$163,828	\$317,496	\$61,384	\$83,542	\$4,800
Milking supplies	\$52,166	\$75,467	\$36,632	\$58,723	\$43,026
Breeding	\$19,622	\$24,924	\$16,087	\$17,390	\$18,453
Veterinary & medicine	\$60,200	\$67,547	\$55,301	\$81,441	\$57,565
Cattle rent & lease	\$5,173	\$3,364	\$6,379	\$2,400	\$3,494
Custom boarding	\$16,705	\$17,801	\$15,974	\$23,712	\$21,965
Other bST & marketing	\$110,627	\$117,432	\$106,090	\$161,753	\$117,281
Fertilizer & lime	\$26,054	\$8,661	\$37,649	\$0	\$35,089
Seeds & plants	\$14,043	\$1,555	\$22,369	\$0	\$27,341
Spray & other	\$23,539	\$14,247	\$29,733	\$0	\$54,090
Land, bldg. & fence repair	\$24,492	\$14,783	\$30,965	\$16,490	\$50,845
Real estate taxes	\$17,886	\$17,249	\$18,311	\$2,467	\$22,085
Rent & lease	\$60,699	\$72,193	\$53,036	\$119,376	\$69,804
Insurance	\$25,329	\$31,278	\$21,363	\$17,090	\$23,440
Utilities	\$50,302	\$65,957	\$39,866	\$53,944	\$37,779
Interest	\$148,945	\$196,355	\$117,338	\$163,367	\$122,563
Miscellaneous	\$82,795	\$127,729	\$52,839	\$46,760	\$44,600
Total Operating	\$2,585,752	\$3,661,938	\$1,868,294	\$2,768,567	\$1,842,370
Expansion livestock	\$73,434	\$102,196	\$54,259	\$151,653	\$19,484
Machinery & bldg. expense	\$184,595	\$213,159	\$165,553	\$73,409	\$92,023
Net Farm Income	\$214,154	\$206,982	\$218,936	\$483,809	\$502,529
Operator's and unpaid family	\$113,372	\$104,425	\$119,337	\$84,000	\$134,000
Rate of Return on Assets	3.97	3.44	4.32	20.08	14.12

Table 3. Receipts & Expenses per Hundredweight

Values for 1996	Average	Western	Eastern	Western Top 5	Eastern Top 5
Milk	\$14.52	\$14.06	\$14.84	\$14.75	\$15.19
Dairy cattle	\$0.51	\$0.42	\$0.58	\$0.43	\$0.37
Dairy calves	\$0.10	\$0.09	\$0.11	\$0.05	\$0.06
Other livestock	\$0.05	\$0.09	\$0.03	\$0.11	\$0.06
Crops	\$0.32	\$0.09	\$0.48	\$0.00	\$0.19
Custom machine work	\$0.01	\$0.00	\$0.01	\$0.00	\$0.01
Government receipts	\$0.08	\$0.03	\$0.11	\$0.00	\$0.14
Other receipts	\$0.31	\$0.18	\$0.40	\$0.14	\$1.41
Total receipts	\$15.90	\$14.96	\$16.55	\$15.47	\$17.43
Expenses					
Hired labor	\$1.96	\$1.37	\$2.37	\$1.15	\$2.51
Dairy grain & concentrate	\$4.41	\$4.79	\$4.14	\$4.84	\$4.04
Dairy roughage	\$1.02	\$1.98	\$0.36	\$1.88	\$0.08
Nondairy feed	\$0.15	\$0.08	\$0.20	\$0.00	\$0.00
Machinery hire, rent & lease	\$0.20	\$0.15	\$0.24	\$0.07	\$0.26
Machinery repairs	\$0.45	\$0.30	\$0.55	\$0.30	\$0.62
Fuel, oil & grease	\$0.21	\$0.13	\$0.26	\$0.12	\$0.21
Replacement livestock	\$0.56	\$0.84	\$0.36	\$0.41	\$0.04
Milking supplies	\$0.26	\$0.29	\$0.25	\$0.26	\$0.29
Breeding	\$0.10	\$0.09	\$0.10	\$0.07	\$0.12
Veterinary & medicine	\$0.33	\$0.24	\$0.40	\$0.34	\$0.40
Cattle rent & lease	\$0.03	\$0.02	\$0.04	\$0.02	\$0.02
Custom boarding	\$0.11	\$0.09	\$0.11	\$0.16	\$0.17
Other bST & marketing	\$0.61	\$0.36	\$0.79	\$0.68	\$0.85
Fertilizer & lime	\$0.22	\$0.14	\$0.28	\$0.00	\$0.25
Seeds & plants	\$0.12	\$0.02	\$0.19	\$0.00	\$0.19
Spray & other	\$0.18	\$0.08	\$0.26	\$0.00	\$0.37
Land, bldg. & fence repair	\$0.17	\$0.07	\$0.25	\$0.09	\$0.35
Real estate taxes	\$0.11	\$0.05	\$0.15	\$0.01	\$0.16
Rent & lease	\$0.35	\$0.25	\$0.43	\$0.48	\$0.47
Insurance	\$0.15	\$0.11	\$0.17	\$0.08	\$0.16
Utilities	\$0.29	\$0.26	\$0.31	\$0.23	\$0.28
Interest	\$0.74	\$0.67	\$0.80	\$0.67	\$0.81
Miscellaneous	\$0.42	\$0.43	\$0.42	\$0.22	\$0.33
Total Operating	\$13.16	\$12.82	\$13.40	\$12.08	\$12.99
Expansion livestock	\$0.48	\$0.60	\$0.40	\$0.63	\$0.12
Machinery & bldg. expense	\$1.16	\$1.00	\$1.27	\$0.31	\$0.67
Net farm income per cwt.	\$1.10	\$0.54	\$1.48	\$2.46	\$3.65

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Table 4. Receipts and Expenses per Cow					
Values for 1996	Average	Western	Eastern	Western Top 5	Eastern Top 5
Milk	\$3,091	\$2,718	\$3,349	\$2,881	\$3,430
Dairy cattle	\$109	\$80	\$128	\$80	\$81
Dairy calves	\$22	\$17	\$26	\$11	\$15
Other livestock	\$12	\$19	\$7	\$19	\$14
Crops	\$68	\$17	\$103	\$0	\$43
Custom machine work	\$2	\$0	\$3	\$0	\$3
Government receipts	\$16	\$6	\$23	\$0	\$29
Other receipts	\$66	\$40	\$85	\$28	\$292
Total receipts	\$3,387	\$2,897	\$3,724	\$3,020	\$3,906
Expenses					
Hired labor	\$426	\$271	\$533	\$226	\$553
Dairy grain & concentrate	\$930	\$926	\$933	\$960	\$913
Dairy roughage	\$211	\$394	\$86	\$345	\$16
Nondairy feed	\$32	\$16	\$43	\$0	\$0
Machinery hire, rent & lease	\$44	\$28	\$54	\$13	\$58
Machinery repairs	\$97	\$59	\$123	\$56	\$141
Fuel, oil & grease	\$45	\$24	\$59	\$23	\$45
Replacement livestock	\$114	\$162	\$81	\$85	\$10
Milking supplies	\$56	\$56	\$56	\$53	\$66
Breeding	\$20	\$17	\$22	\$12	\$28
Veterinary & medicine	\$72	\$47	\$89	\$65	\$91
Cattle rent & lease	\$6	\$3	\$8	\$3	\$4
Custom boarding	\$24	\$20	\$26	\$33	\$40
Other bST & marketing	\$134	\$71	\$177	\$130	\$195
Fertilizer & lime	\$45	\$20	\$62	\$0	\$54
Seeds & plants	\$26	\$3	\$41	\$0	\$43
Spray & other	\$40	\$16	\$56	\$0	\$83
Land, bldg. & fence repair	\$39	\$13	\$56	\$18	\$80
Real estate taxes	\$25	\$11	\$34	\$2	\$37
Rent & lease	\$76	\$49	\$94	\$89	\$99
Insurance	\$31	\$22	\$38	\$16	\$36
Utilities	\$62	\$51	\$70	\$43	\$62
Interest	\$159	\$132	\$178	\$125	\$183
Miscellaneous	\$88	\$76	\$95	\$41	\$68
Total Operating	\$2,801	\$2,488	\$3,017	\$2,338	\$2,904
Expansion livestock	\$100	\$116	\$90	\$130	\$27
Machinery & bldg. depreciation	\$243	\$182	\$285	\$59	\$148
Net farm income per cwt.	\$242	\$112	\$332	\$493	\$826

Table 5. Balance Sheet

Values for 1996	Average	Western	Eastern	Western Top 5	Eastern Top 5
Farm cash, checking & savings	\$26,054	\$25,907	\$26,152	\$9,701	\$27,086
Accounts receivable	\$186,557	\$289,860	\$117,689	\$221,496	\$116,960
Prepaid expenses	\$70,637	\$109,646	\$44,631	\$159,892	\$24,201
Feed & supplies	\$332,372	\$353,990	\$317,960	\$262,537	\$380,788
Total Current	\$615,620	\$779,402	\$506,431	\$653,626	\$549,035
Intermediate Assets					
Dairy cows	\$1,053,631	\$1,511,663	\$748,277	\$1,227,906	\$723,700
Heifers	\$350,712	\$500,226	\$251,036	\$276,042	\$314,204
Bulls & other	\$13,964	\$27,355	\$5,037	\$9,220	\$860
Machinery & equipment	\$505,702	\$401,226	\$575,353	\$340,205	\$530,543
Farm Credit & other stock	\$57,226	\$65,625	\$51,627	\$58,781	\$70,311
Total Intermediate	1,981,235	\$2,506,096	\$1,631,329	\$1,912,154	\$1,639,618
Land & buildings	\$1,802,557	\$2,203,792	\$1,535,068	\$282,480	\$1,301,771
Other assets	\$175,991	\$300,372	\$93,069	\$101,929	\$17,656
Total Assets	\$4,575,403	\$5,789,662	\$3,765,897	\$2,950,188	\$3,508,080
Current Debt					
Operating & short term	\$468,458	\$792,846	\$252,199	\$525,060	\$77,950
Accounts payable	\$113,405	\$205,280	\$52,155	\$251,617	\$38,580
Current portion of int. & long	\$99,327	\$129,467	\$79,233	\$221,270	\$132,068
Total Current Debt	\$681,189	\$1,127,593	\$383,587	\$997,948	\$248,597
Intermediate Debt	811,062	1,208,738	545,945	834,477	820,796
Long Term Debt	\$701,054	\$538,406	\$809,486	\$0	\$549,619
NPV of Leases	\$23,067	\$22,008	\$23,773	\$44,670	\$34,206
Total Liabilities	\$2,216,373	\$2,896,745	\$1,762,791	\$1,877,094	\$1,653,221
Net worth	\$2,359,030	\$2,892,917	\$2,003,106	\$1,073,094	\$1,854,859
Debt/Asset Ratio	46.49	48.77	44.98	60.06	44.28

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Table 6. Cost and Returns per Hundredweight						
Values for 1996	Average	Western	Eastern	Western Top 5	Eastern Top 5	
Dairy grain & concentrate	\$4.41	\$4.79	\$4.14	\$4.84	\$4.04	
Dairy roughage	\$1.02	\$1.98	\$0.36	\$1.88	\$0.08	
Nondairy feed	\$0.15	\$0.08	\$0.20	\$0.00	\$0.00	
Crop expense	\$0.53	\$0.24	\$0.72	\$0.00	\$0.81	
Less Crop sales & govt. recpts.	\$0.39	\$0.12	\$0.58	\$0.00	\$0.33	
Net Feed & Crop	\$5.71	\$6.98	\$4.84	\$6.72	\$4.59	
Hired labor	\$1.96	\$1.37	\$2.37	\$1.15	\$2.51	
Operator's & unpaid family lab.	\$0.88	\$0.69	\$1.02	\$0.44	\$0.98	
Total labor	\$2.84	\$2.06	\$3.39	\$1.59	\$3.49	
Machine repairs, fuel & hire	\$0.86	\$0.58	\$1.06	\$0.49	\$1.09	
Custom work	\$0.01	\$0.00	\$0.01	\$0.00	\$0.01	
Net machinery expense	\$0.85	\$0.58	\$1.04	\$0.49	\$1.07	
Replacement livestock	\$1.03	\$1.44	\$0.75	\$1.04	\$0.17	
Less Cattle sales	\$0.61	\$0.50	\$0.69	\$0.48	\$0.43	
Net cattle purchases	\$0.42	\$0.93	\$0.06	\$0.56	(\$0.27)	
Milk marketing & livestock exp.	\$1.44	\$1.08	\$1.68	\$1.53	\$1.86	
Real estate repair, taxes & rent	\$0.64	\$0.37	\$0.82	\$0.58	\$0.99	
Depreciation mach. & real estate	\$1.16	\$1.00	\$1.27	\$0.31	\$0.67	
Interest paid	\$0.74	\$0.67	\$0.80	\$0.67	\$0.81	
Interest on equity	\$1.23	\$1.01	\$1.39	\$0.47	\$1.17	
Total interest	\$1.98	\$1.68	\$2.19	\$1.14	\$1.98	
Other operating & misc. exp.	\$0.86	\$0.80	\$0.90	\$0.53	\$0.76	
Less Miscellaneous income	\$0.36	\$0.27	\$0.43	\$0.25	\$1.46	
Net misc. expense	\$0.50	\$0.53	\$0.47	\$0.28	(\$0.70)	
Operating Cost	\$12.26	\$12.51	\$12.09	\$11.98	\$10.87	
Total Cost	\$15.54	\$15.21	\$15.76	\$13.20	\$13.69	
Net Return over Operating	\$2.26	\$1.55	\$2.75	\$2.76	\$4.32	

Variable	Average	Western	Eastern	Western Top 5	Eastern Top 5
Milk Price Volatility	3.6	1.9	4.4	2.0	2.4
Feed Prices	3.6	1.8	4.5	1.0	3.6
Environmental Regulations	3.2	4.1	2.8	3.8	3.2
Neighbor Relations	4.4	6.2	3.5	6.8	2.8
Attracting Employees	4.2	5.5	3.6	7.0	3.4
Retaining Employees	4.1	4.4	3.9	4.0	4.0
Motivating Employees	3.8	3.8	3.8	3.8	4.0
Market Access	5.7	4.3	6.5	6.0	4.2
Federal Order Reform	4.9	5.1	4.8	7.3	4.0
Access to Local Input Suppliers	6.8	6.2	7.0	8.3	5.6
Intergenerational Transfer	5.3	5.9	5.1	4.0	5.2
Access to Debt Capital	6.2	5.5	6.5	6.0	5.0

Rating	Average	Western	Eastern	Western Top 5	Eastern Top 5
Excellent	26	16	32	20	40
Good	43	37	47	40	60
Average	15	21	12	40	0
Fair	11	26	3	0	0
Poor	4	0	6	0	0

Rating	Average	Western	Eastern	Western Top 5	Eastern Top 5
Herd Size	69%	60%	74%	80%	80%
Housing	63%	35%	79%	60%	80%
Milking	43%	40%	44%	60%	40%
Manure Handling	57%	50%	62%	60%	60%
Feed Storage	69%	55%	76%	80%	60%
Replacements	67%	70%	65%	80%	80%

Values for 1999	less than 200 cows	200-500 cows	500-1200 cows	greater than 1,200 cows
Herd Size	91	317	738	1904
Milk per Cow	18,806	20,977	22,910	20,610
Return on Assets	4.1%	8.7%	9.2%	8.2%
Return over Operating Costs	\$4.14	\$3.53	\$3.05	\$2.44
Crop Acres per Cow	2.6	2.1	1.6	0.6

more →

Values for 1999	less than 1.0 acres per cow	1.0–2.0 acres per cow	more than 2.0 acres per cow
Herd Size	711	741	722
Milk per Cow	19,723	22,953	22,212
Return on Assets	3.5%	9.9%	9.4%
Return over Operating Costs	\$2.50	\$3.26	\$3.69
Crop Acres per Cow	0.4	1.6	2.5

Values for 1999	Western	Eastern	Western Top 5	Eastern Top 5
Herd Size	1,112	193	1,234	370
Milk per Cow	20,674	19,388	20,586	20,819
Return on Assets	5.1%	6.0%	13.5%	27.3%
Return over Operating Costs	\$2.19	\$4.05	\$2.56	\$7.20
Crop Acres per Cow	0.4	2.2	0.0	1.0