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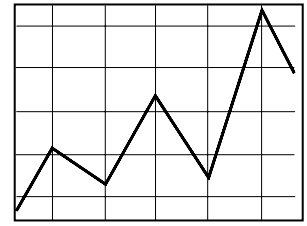
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MARKETING AND POLICY BRIEFING PAPER



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Cost of Producing Milk: A Comparison by State

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Starting in January 2003, the Economic Research Service (ERS) of USDA resumed reporting cost of production (COP) estimates for milk for selected states. According to ERS, the resumption of reporting was motivated by, “..... language in USDA’s 2003 appropriation that strongly urged USDA to make available monthly estimates of COP for milk production in various areas of the United States.”²

ERS dairy cost of production estimates have been subject to criticism on several grounds, including treatment of purchased versus home-grown feeds and computation of (non-cash) opportunity costs, especially for unpaid labor. Despite this criticism, ERS estimates are the only known source of *consistent* dairy cost of production estimates across states and regions — the estimates are derived in exactly the same fashion for each state. This makes these data a good source for making interregional COP comparisons, even though better cost estimates might be available for individual states.

In this paper, we dissect ERS milk cost of production estimates to provide some insights into the competitiveness of the Wisconsin dairy industry. We use monthly state estimates averaged over the six-month period January-June 2003. These estimates are based on USDA’s Agricultural Resource Management Survey conducted in 2000, updated using indexes reflecting current monthly values for production inputs, services, and wages reported by USDA’s National Agricultural Statistics Service (NASS). ERS notes that annual estimates are more reliable than monthly estimates, but annual estimates are published only for six broad regions rather than states.

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² <http://www.ers.usda.gov/Data/CostsAndReturns/monthlymilkcosts.htm>. This site also contains the COP spreadsheets.

ERS costs by category for Wisconsin and two major cheese competitors, California and Idaho, are shown in the following table.

Table 1: ERS Average Costs of Production for Dairy, Jan-Jun 2003

	WI	CA	ID
	\$/Cwt. Of Milk Sold		
<i>Operating costs:</i>			
Feed--			
Feed grains	1.73	1.34	1.94
Hay and straw	0.78	2.24	2.55
Complete feed mixes	0.67	2.11	0.39
Liquid whey and milk replacer	0.12	0.04	0.02
Silage	1.20	0.76	0.87
Grazed pasture and cropland	0.08	0.05	0.05
Other feed items 1/	1.13	0.71	1.41
Total, feed costs	5.71	7.26	7.23
Veterinary and medicine	0.69	0.44	0.64
Bedding and litter	0.18	0.05	0.15
Marketing	0.20	0.19	0.32
Custom services	0.29	0.44	0.33
Fuel, lube, and electricity	0.61	0.49	0.37
Repairs	0.55	0.47	0.63
Other operating costs 2/	0.00	0.01	0.04
Interest on operating capital	0.11	0.13	0.14
Total operating costs	8.34	9.48	9.85
<i>Allocated overhead:</i>			
Hired labor	1.39	1.21	1.44
Opportunity cost of unpaid labor	4.91	1.00	2.12
Capital recovery of machinery and equipment	4.60	2.41	2.99
Opportunity cost of land (rental rate)	0.08	0.01	0.04
Taxes and insurance	0.23	0.14	0.12
General farm overhead	0.57	0.29	0.37
Total, allocated overhead	11.77	5.05	7.09
Total costs listed	20.10	14.53	16.94
Total Costs less Unpaid Costs 3/	10.40	10.99	11.65

1/ Cotton seed meal, protein supplements, protein by-products, alfalfa cubes or pellets, green chop, corn stalks, and antibiotics and other medicated additives.

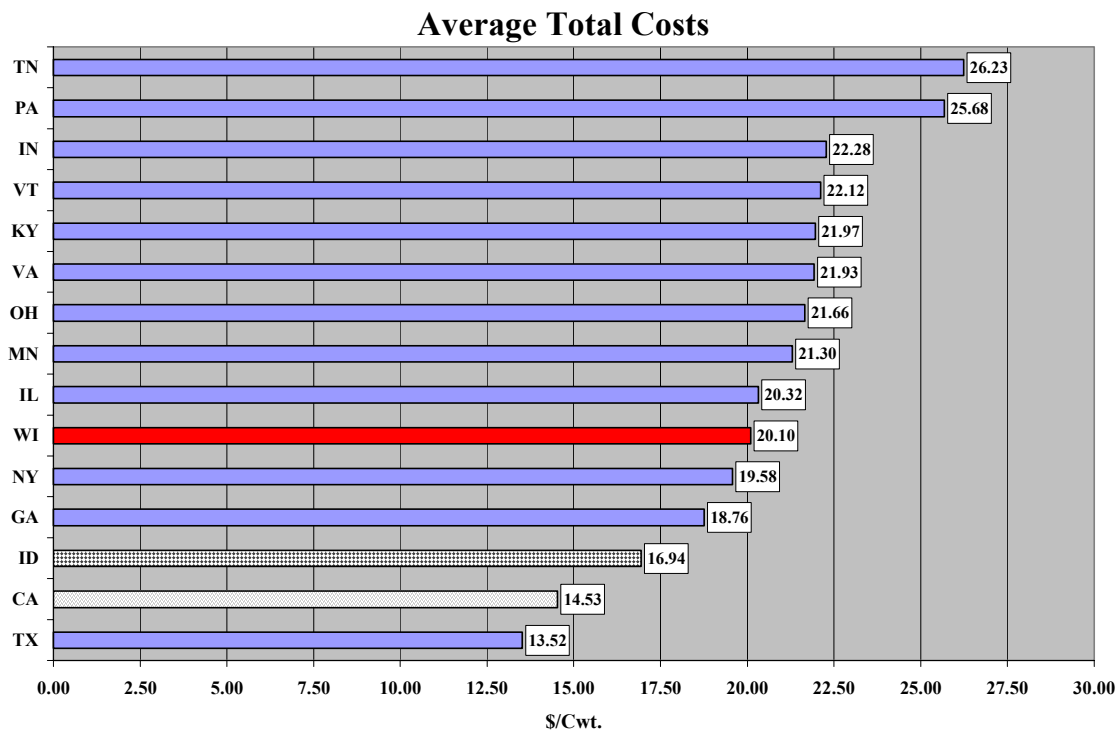
2/ Manure handling.

3/ Unpaid costs include: Interest on Operating Capital, Unpaid labor, Depreciation, and Opportunity cost of land.

Average Total Costs

Using ERS “bottom line” average total costs of production to assess the competitive position of dairy farms paints a grim picture for all of the included states — grimmer for some than others. The range in average costs of producing milk is from \$13.50 per hundredweight in Texas to \$26 in Pennsylvania and Tennessee. In all cases, average production costs are higher than mailbox prices reported for the same states, and in some states, losses of more than \$10.00 per hundredweight are implied.

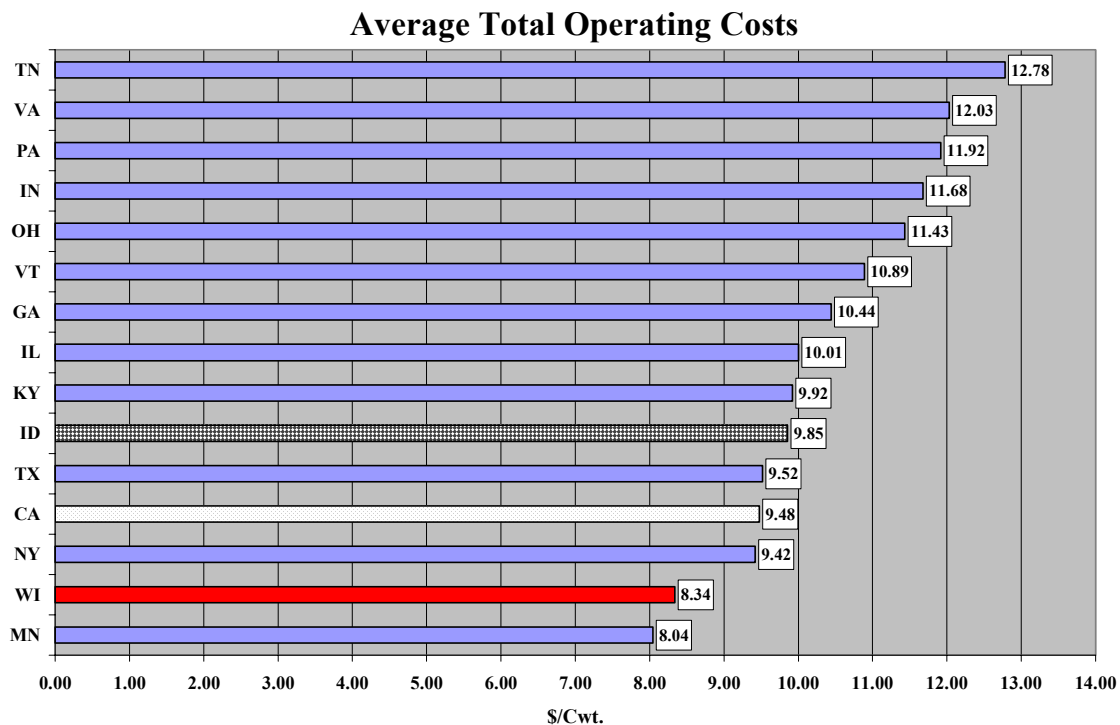
Wisconsin dairy farms are reported to have costs of production just over \$20 per cwt. This is below costs reported for most of the states included, but it is still well above the costs of production reported for Idaho and California. From January through June, 2003, the simple average mailbox price reported by the Agricultural Marketing Service for Wisconsin was \$11.04 per hundredweight. This implies Wisconsin dairy farmers experienced losses of over \$9 per hundredweight during the first six months of 2003.



Operating Costs

The situation is not as grim as average total costs make it appear. ERS breaks out average total costs into two broad categories: Operating costs and allocated overhead. With the possible exception of interest on operating capital³, operating costs are *cash* costs that must be paid if the dairy is to remain in business in the short run.

Operating costs show a distinctly different ordering of states. Wisconsin and Minnesota emerge as the lowest cost states at just over \$8 per hundredweight. This compares to \$9.85 and \$9.48 for Idaho and California, respectively.

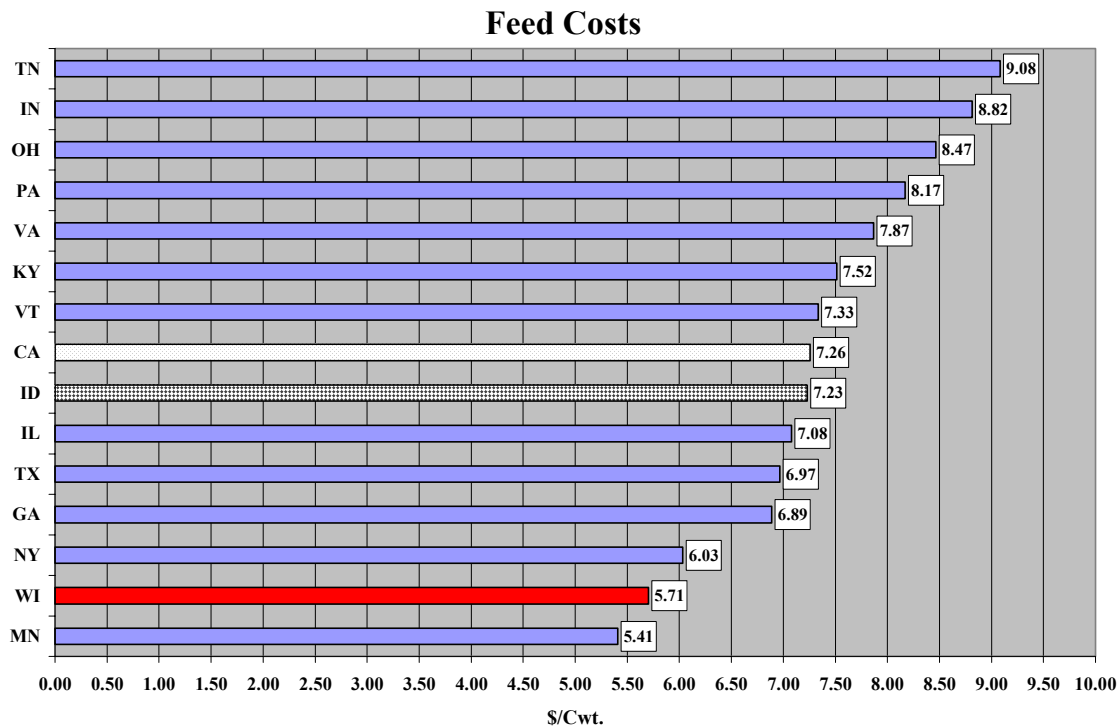


The primary reason for lower total operating costs in Wisconsin is lower feed costs, which comprise the bulk of operating costs. Wisconsin feed costs averaged \$5.71 per hundredweight of milk sold. This was more than \$1.50 under feed costs in Idaho and California.

Table 1 shows that lower feed costs in Wisconsin are attributable, in part, to the composition of feeds. Compared to Idaho and California, where dry hay is the principal forage, Wisconsin makes more extensive use of silage. While not apparent from Table 1,

³ Interest on operating capital would be an opportunity cost if opportunity capital came from farm earnings rather than from an operating loan.

feed prices also favor Wisconsin. In 2002, alfalfa hay averaged \$98.50 per ton in California, \$98 in Idaho, and \$71 in Wisconsin.⁴ Corn prices in 2002 averaged \$2.80 per bushel in California, \$2.90 in Idaho, and \$2.20 in Wisconsin.



Allocated Overhead

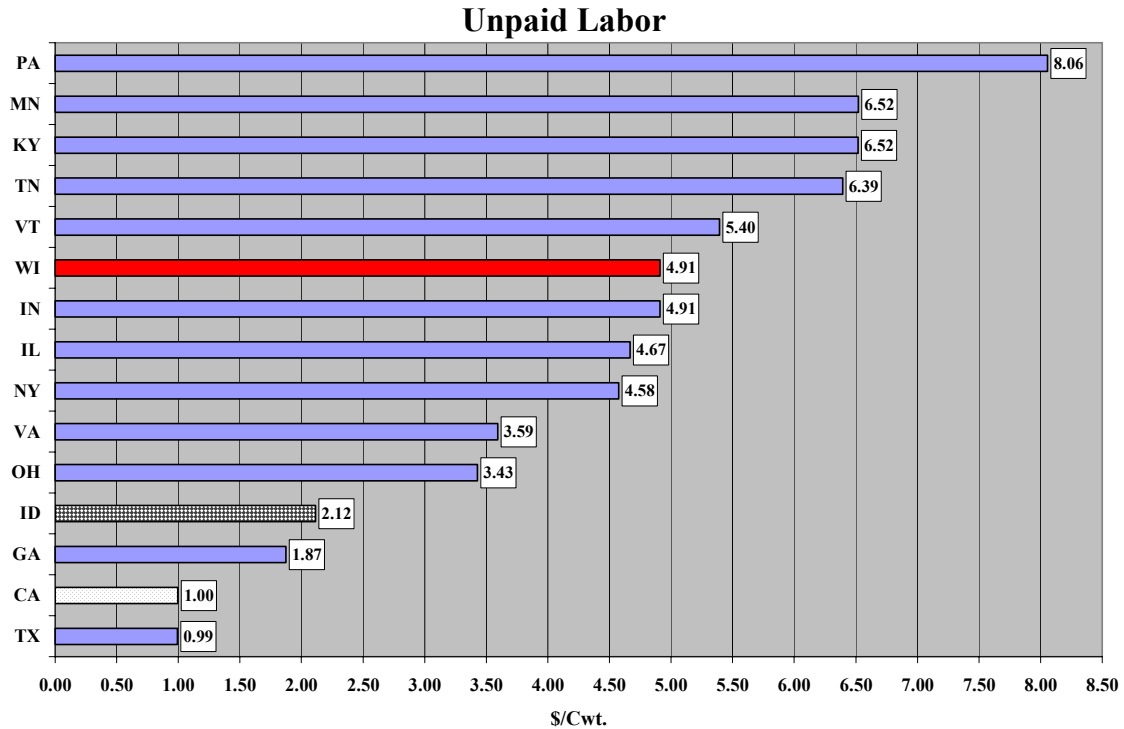
In contrast to operating costs, the costs included under allocated overhead are a combination of cash and non-cash costs. Cash costs include hired labor, taxes and insurance, and general farm overhead. Non-cash costs can be further subdivided into asset depreciation and opportunity costs, which in general represent imputed returns to owned assets or unpaid resources. In the ERS dairy cost of production estimates, the applicable opportunity costs are for owned land measured as its rental value⁵ and unpaid (usually family) labor measured as off-farm wages that the unpaid labor on the dairy might have otherwise earned.

Opportunity costs for unpaid labor range widely across states, from \$1 per hundredweight in Idaho and California to more than \$8 in Pennsylvania. Wisconsin is reported to have unpaid labor costs of \$4.91 per hundredweight. Some of the high opportunity labor costs seem suspect. For example, the numbers imply that a 50-cow Pennsylvania dairy with a herd average of 20,000 pounds would have annual unpaid labor costs of more than

⁴ These prices are not adjusted for possible differences in quality.

⁵ Land in this category is defined as land used only for the dairy operation. The opportunity cost of any owned land used for crop production to support the dairy herd is included in feed costs

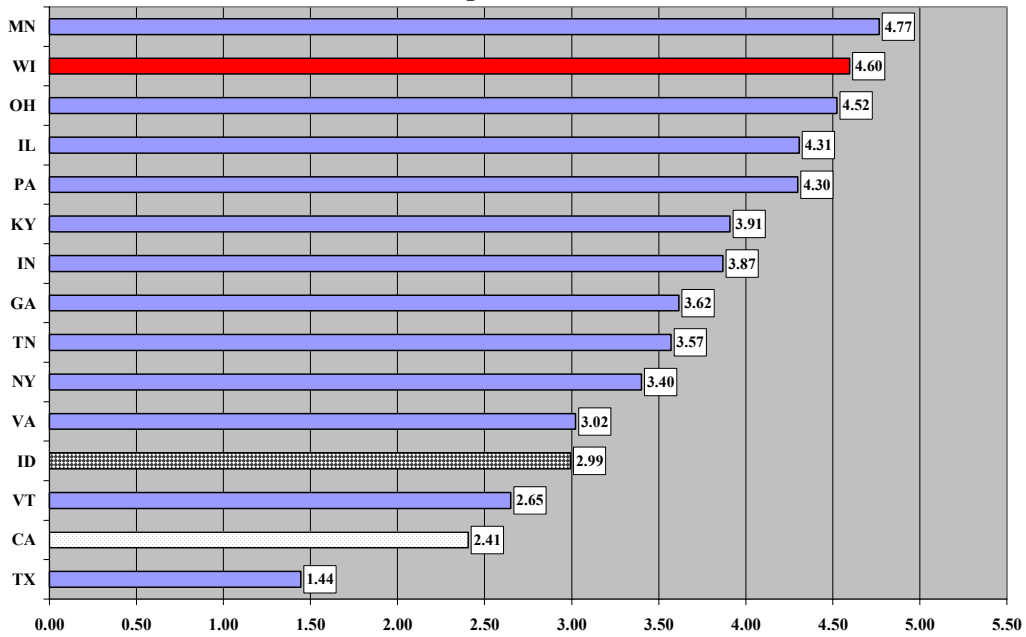
\$80,000. This would seem to be more than a comfortable family income for a farm of this size. Unusually high opportunity costs for unpaid labor reported for some states most likely reflect attractive off-farm wage rates rather than inefficient labor usage.



Like opportunity cost, depreciation is not an out of pocket cost. But depreciation is a cost that must be covered in the long run if a dairy is to remain viable. Wisconsin shows a distinct disadvantage relative to most states in depreciation costs — estimated by ERS at \$4.60 per hundredweight, second only to Minnesota.

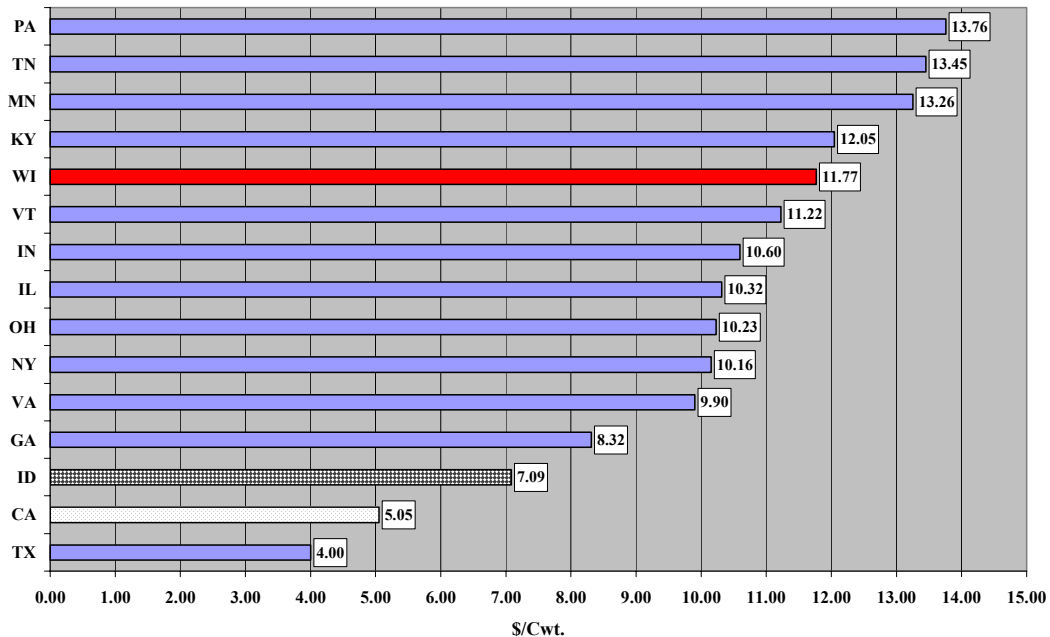
To a large extent, high depreciation for Wisconsin dairies is related to relatively small herd sizes, which usually translates to high investment per cow. It may also reflect overcapitalization in dairy-related assets.

Depreciation



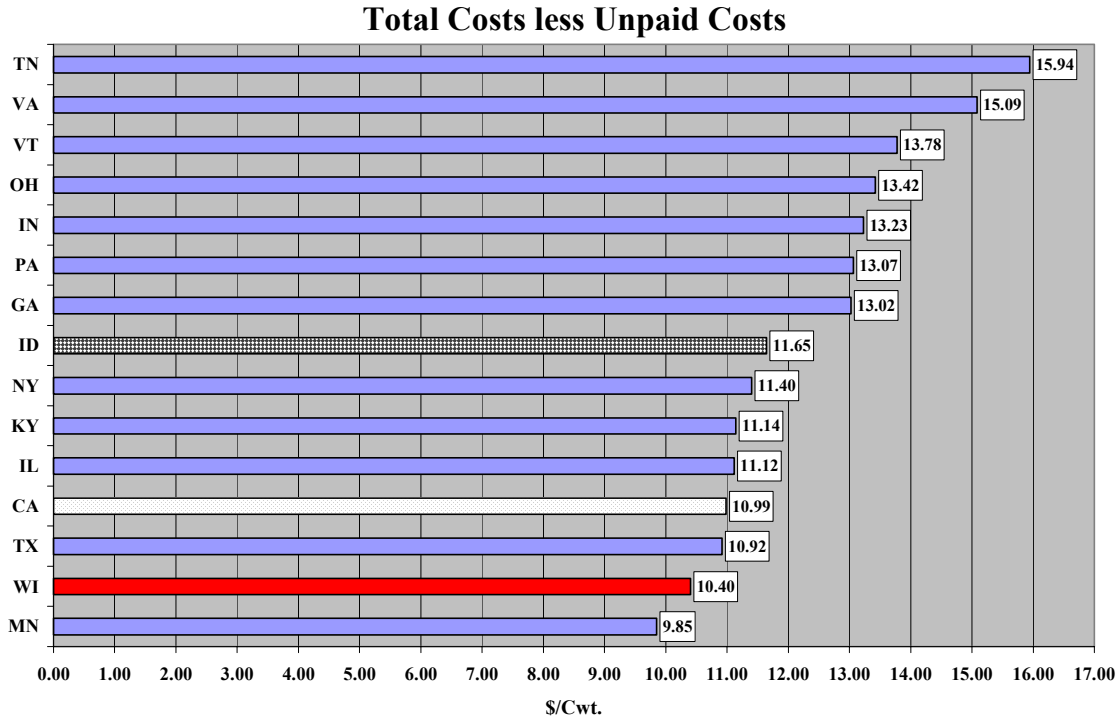
Combining all costs within the allocated overhead category shows a range among states from \$4 to almost \$14. This \$10 per hundredweight range compares to a range of about \$13 for average total costs. There is a tendency for states with relatively high overhead costs to have relatively low operating costs. Overhead costs in Wisconsin were estimated to total nearly \$12 per hundredweight, \$3 more than operating costs.

Allocated Overhead Costs



Cash Costs

The final chart looks at a measure of costs that ERS does not report — average total costs less unpaid costs. Unpaid costs are defined to include interest on operating capital (which assumes no operating capital loans), opportunity costs for unpaid labor and land, and depreciation. This measure might be interpreted as an indicator of the short-term “staying power” of the dairy, or the ability to withstand temporary low milk prices.



Again, the low operating costs observed in Wisconsin and Minnesota place these states at the low end of this cost range. Looking only at cash expenditures, Wisconsin costs are about 60 cents per hundredweight lower than California and more than \$1 lower than Idaho.

Conclusions

Breaking down average total costs of milk production sheds some light on the nature of regional competition in dairying. Cash costs of production in Wisconsin are relatively low, in fact the second lowest among states surveyed by ERS. Overhead costs are relatively high, due mainly to two factors: (1) a high charge for the opportunity cost of unpaid labor, and (2) high depreciation costs. Combining all costs places Wisconsin in the middle of the pack, with costs \$5.57 per hundredweight higher than California and \$3.16 higher than Idaho, the rising stars among cheese states.

To maintain economic viability in the long run, investments in dairy need to earn competitive rates of return, unpaid labor needs to earn wages comparable to off-farm employment, and depreciated assets need to be replaced. So on the surface, it would appear that the long-term competitiveness of Wisconsin is questionable.

On the other hand, it is questionable whether an unpaid family labor charge of nearly \$5 per hundredweight in Wisconsin is reasonable. Family dairy farms still predominate in Wisconsin, along with an understanding that family members will contribute to the farm operation. Adjusting average total costs among states for differences in unpaid labor narrows the cost range considerably. The gap between Wisconsin and California costs narrows to \$1.66 per hundredweight and between Wisconsin and Idaho to \$0.37.

The relatively high depreciation cost for Wisconsin can be viewed as an attainable challenge that can be overcome by investing in more productive assets. For example, converting from a tie stall/stanchion barn based system to a parlor/free-stall system requires a Wisconsin dairy farmer to make a sizeable capital investment. But the investment per hundredweight may well be less than that associated with current capital recovery costs. And the investment will yield lower labor costs and increased efficiencies that will translate into lower overhead costs.

When broken down into constituent elements, the cost of production estimates presented here are encouraging for Wisconsin dairy farmers. They can increase their competitiveness by exploiting their advantages in lower feed costs and by cutting overhead costs through investment in dairy housing and milking systems that have proven successful in western dairy states.

In the last decade or so numerous Wisconsin dairy producers have converted to parlor/free-stall systems, and there are reasons to expect many more conversions. As this transformation of the Wisconsin dairy industry plays out, the average cost of producing milk in Wisconsin should approach levels reported for western dairies.