



## Fact Sheet #8 : MAJOR COST ITEMS ON GREAT LAKES GRAZING NETWORK (GLGN) GRAZING DAIRY FARMS

### Regional Multi-State Interpretation of Small Farm Financial Data from the Fifth Year Report on 2004 Great Lakes Grazing Network Grazing Dairy Data October 2005

#### Overview

The data and conclusions of this paper are derived from the report with the above title from a USDA Initiative for Future Agricultural and Food Systems (IFAFS) Grant project #00-52101-9708. Some strengths of this work include standardized data handling and analysis procedures, combined actual farm data of ten states and one province to provide financial benchmarks to help farm families and their communities be successful and sustainable. The main report is also based upon work supported by Smith Lever funds from the Cooperative State Research, Education and Extension Service, U.S. Department of Agriculture. The full report is available at:

<http://cdp.wisc.edu/pdf/GLGN%20USDA%202004%20ReportF.pdf>

Participating grazing dairy farms must typically obtain 85% or more of gross income from milk sales, or 90% of gross income from dairy livestock sales plus milk sales, harvest over 30% of grazing season forage by grazing and must provide fresh pasture at least once every three days.

Management Intensive Rotational Grazing (MIRG) has become a more common dairy system in the northern U. S. This analysis of actual farm financial data from 101 graziers in 2004, 102 in 2003, 103 in 2002, 126 in 2001, and 92 in 2000 (more than 203 farms supplied at least one year of data), mainly from the Great Lakes region, provides some insight into the economics of grazing as a dairy system in the northern U.S.:

- There is a range of profitability amongst graziers. The ratio between the most profitable half and the least profitable half's Net Farm Income from Operations (NFIFO) per cow and per Hundredweight Equivalent (CWT EQ) was greater in the lower profit years (usually with lower milk prices) than in the higher profit years. For more information, see Fact Sheet #2 of this series.
- The average grazing herd with less than 100 cows had a higher NFIFO per cow and per CWT EQ than the average grazing herd with 100 cows or more. The smallest margin appeared in the 2003 data. For more information, see Fact Sheet #3 of this series.
- Differences between seasonal and non-seasonal calving/milking herds were reviewed. Non-seasonal herds had a large NFIFO per cow and per CWT EQ advantage in 2000 and 2002. The seasonal herds (stop milking at least one day each calendar year) had a large NFIFO per cow and per CWT EQ advantage in 2001 and 2004 and a very small advantage in 2003. **Careful examination of the data suggests that achieving a given level of NFIFO per cow or per CWT EQ is more difficult in a seasonal system.** The seasonal group had a smaller range of financial performance within a year but experienced more variability of financial performance from year to year. Less than 15 percent of the herds in the data were seasonal. For more information, see Fact Sheet #4 of this series.
- The graziers in the study were economically competitive with confinement herds in the states that had comparable data from both groups. For more information, see Fact Sheet #5 of the series.
- While breed of cattle is a minor factor affecting profitability, the Holstein herds in the data had better financial performance in four years of comparisons with other breeds. For more information, see Fact Sheet #6 of this series.
- The ranking of major cost items is remarkably similar between grazing and confinement herds. For more information, see Fact Sheet #7 and #8, of this series.
- Relatively consistent differences in financial performance between states have appeared in all years. These differences must be considered when interpreting the data.

The study also confirms that accounting methodology and financial standards are important both in the accuracy and in the standardization of comparison values across large geographic areas that involve different combinations of production assets and management skills. In comparing the results of this study with other data, it will help to understand the measures used here but not in all places in the country.

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#### Major Cost Items on Great Lakes Grazing Network (GLGN) Grazing Dairy Farms

Cost data from GLGN farms provide an interesting comparison to Wisconsin grazing and confinement farms (**Important. See cost definitions on page three**).

#### In this five-year average:

- Basic costs represented 74% of allocated costs and 61% of income.
- Non-basic costs represented 26% of allocated costs and 21% of income.
- **With 82% of income used up by allocated costs (basic plus non-basic), 18 cents of every dollar of income is left for NFIFO** (NFIFO equals returns to unpaid labor, management and equity). *Without non-farm income, NFIFO (plus depreciation taken) is the annual source of family living funds.*

#### The Big Four Costs! (used over half of the total allocated cost and almost half of the income for GLGN grazing dairy farms)

1. Purchased feed	27.0% of allocated cost and 22.0% of income
2. Non-livestock depreciation	11.0% of allocated cost and 9.0% of income
3. Paid labor and management	9.0% of allocated cost and 8.0% of income
4. Repairs	7.0% of allocated cost and 6.0% of income

**Purchased feed** was easily the highest cost category each year. **Paid labor and management, non-livestock depreciation and repairs** were the other three of the four major costs for GLGN grazing dairy farms. These three cost categories together typically account for another 27% of allocated costs and 23% of income on GLGN grazing farms. Paid labor and management and non-livestock depreciation are non-basic costs. Purchased feed and repairs are basic costs. For the GLGN graziers, the five year average purchased feed cost was slightly larger than total non-basic costs.

Livestock depreciation is a basic cost and was much smaller than non-livestock depreciation. Its amount averaged less than one percent of income for GLGN graziers. Herds that increase or maintain size by purchasing replacements experience higher amounts of livestock depreciation. If livestock depreciation were added to non-livestock depreciation, its second place ranking among cost categories would not change.

**Paid labor is a non-basic cost and was the third highest cost category** in four years. It was second highest when it wasn't in third place.

#### The Second Big Four Costs!

5. Interest	6.0% of allocated cost and 5.0% of income
6. Marketing and hedging	4.0% of allocated cost and 3.0% of income
7. Other livestock expense	3.0% of allocated cost and 2.0% of income
8. Supplies	3.0% of allocated cost and 2.0% of income

Collectively, the second "big four" account for about another 16% of allocated cost and 12% of income. In some years, interest was the fourth largest cost item for GLGN grazing herds. Interest was a non-basic cost. "Marketing and hedging," "other livestock expense," and "supplies" are basic costs and are more difficult to interpret since each one can contain a wide variety of individual items.

Once again, property tax and veterinary and medicine expense was a smaller portion of allocated cost and income than many perceive. Property tax typically represented about 2% of allocated cost and 2% of income. Veterinary and medicine typically represented about 3% of the allocated cost and 2% of income.

#### Cost of Production (COP) Table

The five year (2000-2004) simple average COP report is shown in **Table 1** two ways. First, costs are shown in the COP sequence

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used in AgFA© to show the calculation of allocated, basic, non-basic and total cost. Secondly, cost items are ranked from highest to lowest to help understand and control costs. Individual year performance was also examined in these ways from an average of 105 farms per year.

Columns show each cost item per hundredweight equivalent, as a percent of allocated cost, and as a percent of a dollar of income. Careful readers of the tables will notice that all of the percentages in a column add up to more than 100%. That is because the tables include major cost categories such as allocated, basic, non-basic and total, in addition to the individual cost items that make up these larger categories. For example non-basic costs are paid labor and management, interest and non-livestock depreciation. Because of rounding, other small mathematical differences might be found in the tables.

### Definitions

**Total cost** includes all cash and non-cash costs including the opportunity cost of unpaid labor, management and equity capital. The total cost concept is needed to determine the minimum revenue required to meet long-run financial obligations of the business. All long-run financial obligations include a satisfactory reward for the owners' unpaid labor, management and equity capital (opportunity costs).

In the calculation of NFIFO, all costs are accounted for EXCEPT the opportunity cost of unpaid labor, management and equity capital. All costs combined except opportunity costs are called total allocated costs. Total allocated costs are subtracted from total income to calculate NFIFO. When opportunity costs are calculated and added to total allocated costs, the result is what economists call total costs. A simple definition of opportunity cost is: "The return to unpaid labor or unpaid management or equity capital in its best realistic alternative use."

In large companies such as publicly traded companies, there are NO opportunity costs of **unpaid** labor, management and equity capital, because all work and management is performed by paid employees, and dividends are paid to the stockholders which own the equity. Total income for such businesses must regularly exceed total costs to be considered profitable. Most industries are dominated by businesses that are able to pay total costs.

However, in the case of many dairy farms, one person or family supplies all of the unpaid labor, management and equity capital. In such cases, the value of unpaid labor, management and equity capital must be estimated to determine if total income exceeds total cost.

The total cost of production for businesses that have no unpaid labor, management and equity capital is more accurate than those which have unpaid costs because there isn't a universally agreed upon best method for calculating the opportunity cost of unpaid labor, management and equity. Therefore, special caution is required when interpreting total cost data from businesses such as small family farms when you do not know the method used to calculate the opportunity costs or the amount of those costs.

**NFIFO** is the return to the resources that farm families contribute to the farm business. The resources are unpaid family labor, unpaid family management, and the family's equity (net worth) in the farm business. **Quite often, NFIFO is less than the opportunity cost of unpaid family labor, management and equity capital.** NFIFO is seldom all cash.

**For the farm family without non-farm income, NFIFO** (plus depreciation taken) is the source of funds for family living expenses, including housing and furnishings, food, medical expenses, children's education, the family car, entertainment, social security taxes, income taxes, and other personal items. It also represents money to pay principal on borrowings for land, buildings, and equipment and is a source of funds for new business and personal savings.

**When there is no outside source of income and NFIFO is less than the family living expenses, equity will decline**, whether or not NFIFO exceeds opportunity costs. The cash to pay for living expenses above NFIFO may come from loans, savings, or from the portion of net farm earnings allocated to capital items or inventory adjustment. When the latter happens, it is often said that the family is living off of depreciation. This is a way in which cash flow can hide a lack of profitability.

**Allocated Cost** equals total cost minus the opportunity cost of unpaid labor, management and capital supplied by the owning family. Allocated cost also equals total income minus NFIFO.

**Non-Basic Costs** include interest, non-livestock depreciation, labor, and management. Allocated cost minus basic cost equals non-basic cost.

**Basic Costs** are all the cash and non-cash costs except the opportunity costs and interest, non-livestock depreciation, labor, and management. Basic cost is a useful measure for comparing one farm to another that differs by: the amount of paid versus unpaid labor; the amount of paid versus unpaid management; the amount of debt; the investment level; and/or the capital consumption claimed (depreciation).

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Table 1 Great Lakes Grazing Network Grazier Five-Year Average Cost of Production

Standard Cost of Production Report	Cost of Production			Cost Items Ranked from Highest to Lowest	Cost of Production		
	/CWT EQ	As a % of Allocated Cost	As a % of Income		/CWT EQ	As a % of Allocated Cost	As a % of Income
<b>U. S. Average Milk Price</b>	\$13.60		100.00%	<b>U. S. Average Milk Price</b>	\$13.60		100.00%
<b>Cash Expenses</b>				<b>Cash Expenses</b>			
Breeding Fees	\$0.15	1.35%	1.10%	<b>Total Allocated Cost</b>	<b>\$11.13</b>	<b>100.00%</b>	<b>81.78%</b>
Car and Truck Expense	\$0.03	0.23%	0.19%	(Basic + Non-basic)			
Chemicals	\$0.09	0.77%	0.63%	<b>Total Basic Cost</b>	<b>\$8.25</b>	<b>74.12%</b>	<b>60.64%</b>
Custom Hire (Machine Work)	\$0.35	3.11%	2.54%	Feed Purchase	\$3.01	27.08%	22.16%
Custom Heifer Raising	\$0.00	0.04%	0.03%	<b>Total Non-basic Cost</b>	<b>\$2.88</b>	<b>25.84%</b>	<b>21.14%</b>
Feed Purchase	\$3.01	27.08%	22.16%	<b>Depreciation: Non-livestock</b>	<b>\$1.21</b>	<b>10.89%</b>	<b>8.91%</b>
Fertilizer and Lime	\$0.30	2.70%	2.21%	<b>Total Paid Labor</b>	<b>\$1.04</b>	<b>9.38%</b>	<b>7.67%</b>
Freight and Trucking	\$0.09	0.81%	0.66%	<b>Total Non-Dependent Labor</b>	<b>\$1.01</b>	<b>9.04%</b>	<b>7.39%</b>
Gasoline, Fuel, and Oil	\$0.29	2.64%	2.16%	Repairs all	\$0.84	7.31%	5.98%
Farm Insurance	\$0.19	1.71%	1.40%	<b>Total Interest Cost</b>	<b>\$0.62</b>	<b>5.57%</b>	<b>4.56%</b>
Marketing & Hedging	\$0.43	3.88%	3.18%	Marketing & Hedging	\$0.43	3.88%	3.18%
Rent/Lease Equipment	\$0.04	0.38%	0.31%	Custom Hire (Machine Work)	\$0.35	3.11%	2.54%
Rent/Lease Other	\$0.27	2.39%	1.96%	Supplies Purchased	\$0.34	3.02%	2.47%
Repairs all	\$0.84	7.31%	5.98%	Utilities	\$0.32	2.91%	2.38%
Seeds and Plants Purchased	\$0.16	1.44%	1.18%	Fertilizer and Lime	\$0.30	2.70%	2.21%
Supplies Purchased	\$0.34	3.02%	2.47%	Veterinary Fees and Medicine	\$0.30	2.70%	2.21%
Taxes - Other	\$0.23	2.07%	1.69%	Gasoline, Fuel, and Oil	\$0.29	2.64%	2.16%
Utilities	\$0.32	2.91%	2.38%	Other Farm Expenses	\$0.29	2.62%	2.15%
Veterinary Fees and Medicine	\$0.30	2.70%	2.21%	Rent/Lease Other	\$0.27	2.39%	1.96%
Other Farm Expenses	\$0.29	2.62%	2.15%	Taxes - Other	\$0.23	2.07%	1.69%
Other Crop Expenses	\$0.01	0.05%	0.04%	Farm Insurance	\$0.19	1.71%	1.40%
Other Livestock Expenses	\$0.07	0.65%	0.53%	Seeds and Plants Purchased	\$0.16	1.44%	1.18%
Depreciation: Livestock	\$0.09	0.77%	0.63%	Breeding Fees	\$0.15	1.35%	1.10%
<b>Total Basic Cost</b>	<b>\$8.25</b>	<b>74.12%</b>	<b>60.64%</b>	Freight and Trucking	\$0.09	0.84%	0.69%
<b>Total Interest Cost</b>	<b>\$0.62</b>	<b>5.57%</b>	<b>4.56%</b>	Chemicals	\$0.09	0.77%	0.63%
<b>Total Dependent Labor</b>	<b>\$0.04</b>	<b>0.36%</b>	<b>0.29%</b>	Depreciation: Livestock	\$0.09	0.77%	0.63%
<b>Total Non-Dependent Labor</b>	<b>\$1.01</b>	<b>9.07%</b>	<b>7.42%</b>	Other Livestock Expenses	\$0.07	0.65%	0.53%
<b>Total Paid Labor</b>	<b>\$1.04</b>	<b>9.34%</b>	<b>7.64%</b>	Rent/Lease Equipment	\$0.04	0.38%	0.31%
<b>Depreciation: Non-livestock</b>	<b>\$1.21</b>	<b>10.87%</b>	<b>8.89%</b>	<b>Total Dependent Labor</b>	<b>\$0.04</b>	<b>0.34%</b>	<b>0.28%</b>
<b>Total Non-basic Cost</b>	<b>\$2.88</b>	<b>25.88%</b>	<b>21.17%</b>	Car and Truck Expense	\$0.03	0.23%	0.19%
<b>Total Allocated Cost</b>	<b>\$11.13</b>	<b>100.00%</b>	<b>81.78%</b>	Other Crop Expenses	\$0.01	0.05%	0.04%
(Basic + Non-basic)				Custom Heifer Raising	\$0.00	0.04%	0.03%
Unpaid Labor/Management	\$1.96	17.61%	14.41%				
Interest On Equity	\$1.40	12.58%	10.29%				
<b>Total Opportunity Cost</b>	<b>\$3.37</b>	<b>30.28%</b>	<b>24.77%</b>				
<b>Total Cost</b>	<b>\$14.49</b>	<b>130.19%</b>	<b>106.51%</b>				
Total Income Minus Total Cost	-\$0.89						
<b>Net Farm Income from Operations (NFIFO)</b>	<b>\$2.69</b>	<b>24.17%</b>	<b>19.77%</b>				
Gain (Loss) on Sale of All Farm Assets	\$0.12	1.08%	0.88%				
<b>Net Farm Income (NFI)</b>	<b>\$2.60</b>	<b>23.36%</b>	<b>19.11%</b>				