

How much does it cost to make milk on a small conventional farm in Northern Vermont?

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Produced for Vermont Farm Viability business advisors with funding from NE-SARE

The Center for an Agricultural Economy in Hardwick conducted a dairy cost of production (COP) study in Northern Vermont with the support of NE-SARE funding. Seven farms were included across central and Northern Vermont within a 40 mile radius to standardize production constraints. The included farms ship to the conventional market (Agrimark or DFA), milk under 100 cows, and primarily grow hay (dry and ensiled) as a crop and thus primarily feed hay and grain.

This type of farm represents roughly 20% of the farms that are left in Vermont. We chose to work with this subset of farms because they are rapidly disappearing from landscape despite their positive impact on our land, economy, and community, and because they are largely underrepresented in terms of published cost of production information.

Average number of cows was 54 milking per farm with an average of 241 acres in production (combined hay land and grazing land). Each farm supplied their 2020 financials, and answered a list of interview questions to help provide a better understanding of their production system. The data were compiled and brought back to the farms so that they could compare their numbers to the group (all data kept anonymous), and discuss outliers. Each farm then had the opportunity to work with a private nutritionist, and/or grazing consultant to address grain and forage management as feed has the largest impact on variable farm expense, and/or work with a business planner to address other leverage points for reducing COP.

	Average	Range
# Cows Milking	54.14	28-88
Acres in Hay	182.71	75-280
Acres in Grazing	59.57	22-100
Total acres/cow	4.48	3.4-6.4
Lb grain fed/cow/day	17.57	10-21.5
Grain: Milk Ratio	0.33	0.21-0.45
Avg Cell Count	101K	50K-150K

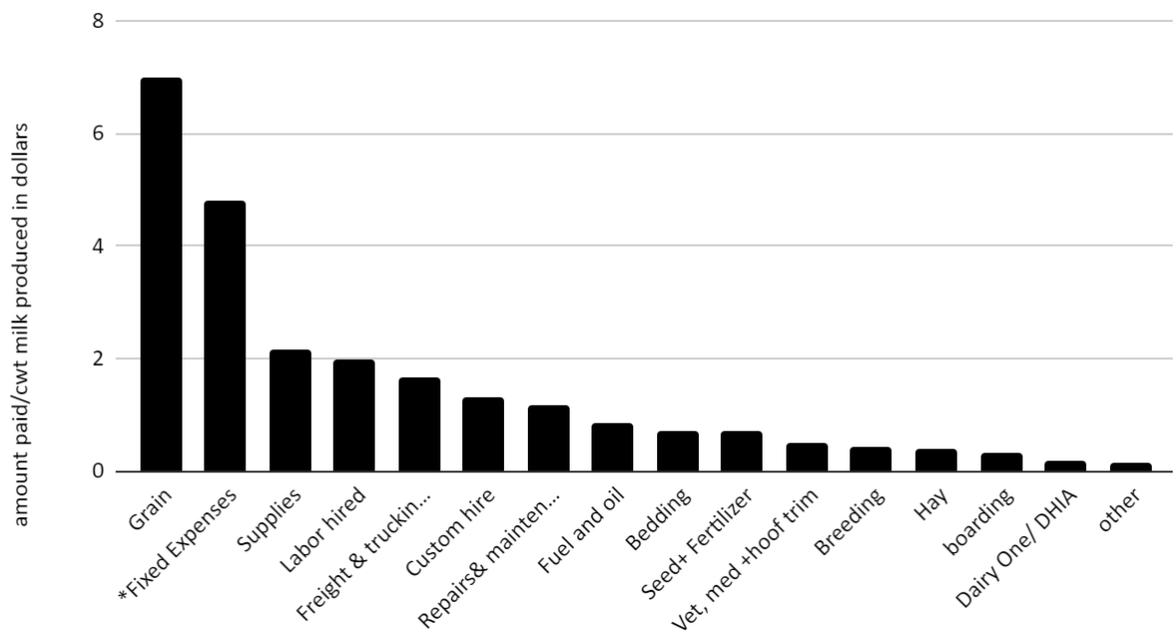
Average COP including all fixed and variable expenses, farm debt service, and depreciation (assigned value of \$10K/50 cows) was \$23.37/cwt which does *not* include owner labor, owner's draw or family living. The average price received for milk in 2020 was \$18.51/cwt, which is \$4.86 less than COP, or represents the average dollar amount lost per cwt of milk in this study. This discrepancy equates to \$53,853.66 over the 1.1million pound average milk production per farm which has to be made up for via other income streams on or off the farm, additional debt, or savings loss. There was a wide range of profitability among the farms

included, and many of them are able to add in other enterprises to maintain positive cash flow or could make management changes to decrease COP, but if we look at the numbers at face value, the message is clear: small farms in Vermont are not at all supported by the commodity dairy industry.

	Average	Range
Cwt milk shipped	11081.51	5140 - 23081
Rolling herd average (lb)	19783.17	16233 - 26228
#milk/cow/day	54.20	44 - 72
Average price received	\$18.51	\$17.00 - \$19.53
COP/cwt fixed and variable expenses only	\$20.44	\$15.15-\$26.62
COP/cow fixed and variable	\$3998.84	\$2827-\$5112
COP/cwt including debt service and depreciation*	\$23.37	\$18.98- \$27.71
COP/cwt including family living allocation	\$24.89	\$19.02 -\$27.85

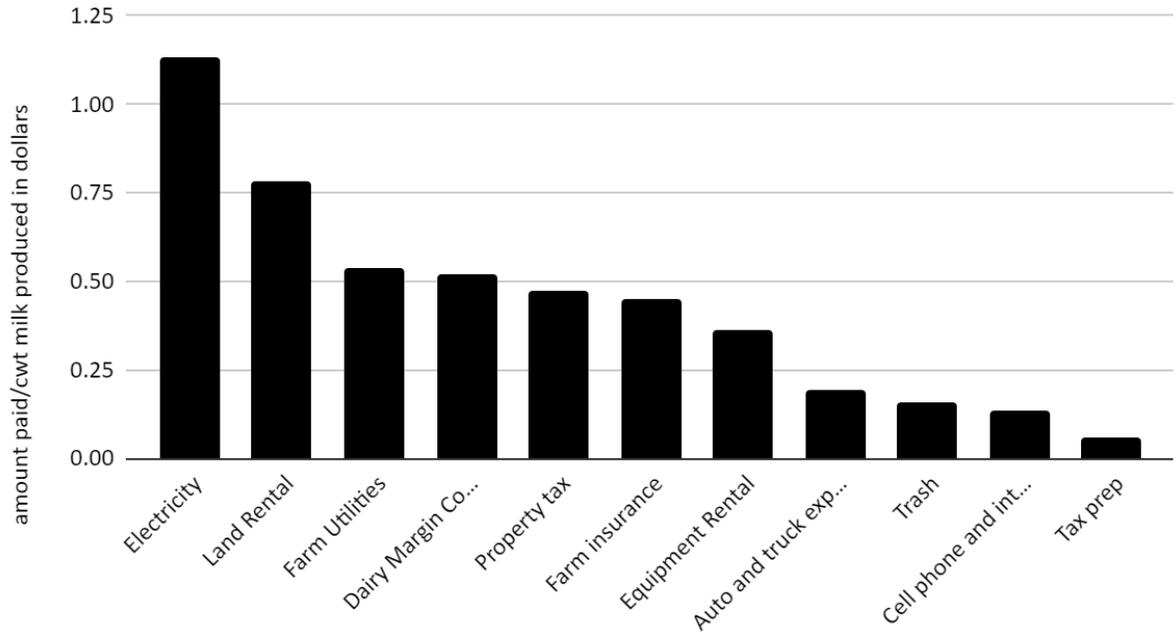
*Depreciation assigned at \$10,000/50 cows/ year for the purpose of this study

Farm Expense per cwt Milk Produced



*Fixed expenses include: Utilities, electricity, insurance, land rental, equipment rental, property tax, auto and truck expense, office supplies, trash, phone, and tax prep.

Fixed expenses per cwt



	Average	Range
COP/cow fixed and variable	\$3998.84	\$2827-\$5112
Feed cost/cow/day inc. minerals, no hay production cost	\$3.87	\$1.87- \$5.14
Feed cost/cow/day including seed and fertilizer to add corn silage production expense	\$4.01	\$2.25- \$5.14
Income over feed cost (IOFC)*	\$6.12	\$4.77- \$7.07

*US National average for IOFC in 2020 was \$9.33

Key leverage points identified/used in this study to reduce COP on farms:

- Ration changes
 - Balancing starch and protein
 - Looking at alternative mixes from feed companies
 - Routing grain through coop

- Changing graining timing to match forage consumption
- Changes to hay feeding management to manage varying quality while not disrupting rumen
- Sourcing corn silage if available to replace some grain
- Switching to higher forage ration to reduce grain costs
- Forage management
 - Planning for optimization of forage NDF and protein via harvest time, time between mowing and baling, fiber length
 - Planning for manure and fertilizer additions to optimize land base
 - Cost/benefit analysis of up front fertilizer/manure spreading cost versus higher grain payments over the winter based on forage tests.
 - Discussion of grazing practices to maximize DMI from pasture in grazing season
- Water access
 - In barn, in pasture
 - Smooth barn flow and water access
- Free choice salt and minerals in barn and on pasture
- Increasing barn ventilation
- Exploration of alternative bedding sources and products
- Reduction of young stock for farms carrying too many
- Bulk tank size discussion for farms with abnormally high freight- usually due to every day pick-ups due to small bulk tank size, and new tank quickly pays for itself given increased hauling and stop charge rates
- Utilization of IBA to track down PI issues in milking system
- Discussion of production management of other nearby farms
- Electricity costs- in most cases farms have already worked with efficiency vermont to replace light bulbs, pumps, and fans, but not always, so is worth looking into.
 - Recycling warm water from the plate cooler can be a tactic to save water, and in the winter helps cows consume more water which can increase milk production.
 - We were largely disappointed with efficiency Vermont's programs for farms right now and their staff knowledge of farms.
- Hauling-this is a massive expense for these small farms. Any changes made to decrease hauling costs for small farms would make a significant impact on COP and thus farm profitability.

Next steps

We found that this study was a great “ice breaker” for working with farms that may not otherwise enroll in FV, and was very well received by all the farms involved. We are working with the majority on 2021 numbers and hope to expand the work to include more farms and create a more robust data set. This COP work was a very straightforward way to engage with these small dairies through a financial lens, and quickly opened the door to larger management discussions. It was incredibly helpful to have Bill Kipp on board for farm visits and consultations, and farmers

were generally grateful for his perspective. If you would like to use or discuss the template we created, please reach out.

Though it came as no surprise, this work confirmed the notion that if small family farms are to continue to exist in our rural landscape, the issue of pay price and farm scale needs to be addressed. Small farms simply cannot compete with 500 or 10,000 cow dairies on cost of production. We need to start thinking more creatively- new markets and processing facilities, exploration of alternatives to commodity grain markets, restructuring (or state payment) of hauling costs; a pricing structure that values the ecological, environmental and social benefits of small farms...All ideas should be on the table.

[HERE](#) is an example of the sheets farmers received post data collection: