

NY Study Shows True Cost of Organically-Raised Heifer Replacements Part Two: The Influencing Factors

By

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This is the second part of a two-part report on the “Organic Dairy Heifer Replacement Study” developed to identify the true cost of organically-raised heifer replacements. Fifteen organic dairy farms located across New York state participated in this study, funded by a grant from the Northeast Dairy Business Innovation Center.

Part One of this report includes the methods used to collect and analyze data from the participating farms and highlights why understanding the factors behind the true cost of raising replacement heifers is critical for good management of animal health, lifetime production, and farm goals. It also highlighted some of the factors influencing the successful rearing of healthy replacements and unique challenges and opportunities identified by the participating organic farmers.

In this report, we provide data-based benchmarking that dairies may use to analyze costs and management practices related to raising replacement heifers either organically or conventionally. The benchmarks can be used to evaluate costs for areas for improvement and to enhance decision-making related to heifer raising. For example, questions to ask include:

- **What is the investment you are putting into your heifers?**
- **How many heifers do you need each year?**
- **If buying or selling heifers, what is a reasonable price?**
- **Can you improve the different groups of heifers within your heifer-raising enterprise?**

METHODS

Cornell University’s PRO-DAIRY’s “Dairy Replacement Analysis” was used to organize data from the 15 organic dairies participating in this study. Data for conventional dairies were taken from the Cornell Dairy Replacement Program: Cost & Analysis Report of Summer 2019ⁱ with costs adjusted for 3 percent inflation. A spreadsheet system allowed comparison of the datasets for each management system.

Data were collected for different groups of heifers on the organic dairy farms so that cost and growth rates could be shown on a per-day basis. The data included costs for feed, labor, bedding, healthcare, manure handling, facilities, and “opportunity” interest. Weights of the animals were collected at different stages to see how rates of gain varied between farms.

BENCHMARKING: Costs by Category

Among the strengths and challenges of working with organic dairies has always been the diversity of management styles and systems. In this study, the farms had different animal numbers and feeding programs ranging from grain to grass-fed. Each farmer uses the farm’s geographical location, soils, and personal strengths to design the management style that best fits that farm’s environment, animal welfare standards, and farm goals.

We addressed the diversity of management by selecting farms for the benchmarking that fit the following parameters: herd size between 50 and 300 cows, feeding some grain, and separating

heifers into at least four age groups. The benchmarks presented in this report were developed from data collected from seven of the fifteen total farms in the study that fit our parameters. These farms managed 1,037 of the 1,318 total animals in the study.

To determine a true cost for raising heifers from birth to calving, we included the costs of feed, labor, bedding, healthcare, manure handling, heifer-raising facilities (building and machinery), and interest on the farm’s investment in raising its heifers. For the farms in the organic dairy benchmark group, the cost of raising a calf to freshening is \$4.52 per day or \$3,172 per animal. The following tables and figures show how the total cost was divided by activity.

Table 1. Cost Breakdown for Organic Dairy Heifers by Category, Organic Dairy Heifer Replacement Study, 2023.

ITEM OR ACTIVITY	COST/DAY	PERCENT OF TOTAL
Feed	2.71	60%
Labor	0.83	18%
Bedding	0.23	5%
Health care	0.03	1%
Machinery	0.10	2%
Building Cost	0.08	2%
Manure Handling	0.05	1%
Interest	0.49	11%
Total Daily Cost	4.52	100%

The average time from birth to freshening for the calves on the group of farms in the study was 24.9 months, so it was not a surprise to have feed and labor as the top two costs of raising a heifer.

The third-highest expense is the interest on, or “opportunity cost” of, the money invested in raising heifers. In other words, if a farm chose not to raise a heifer but purchase a replacement, the money saved on not raising a heifer for 24.9 months was available to pay for that new heifer. With the final cost of raising a heifer at \$3,172, approximately \$350 (11%) was above the actual cost of the heifer.

BENCHMARKING: Costs by Stage of Growth

An important part of understanding the cost of the dairy replacement is when the cost is incurred. Table 2. shows feed and labor costs by age of the calf.

The organic dairy farms in this study continued to feed milk for an average of 13.5 weeks. This is the period of the highest cost per day since the animals are drinking high value whole organic milk and require more labor since the calf is monitored closely to be sure of consuming the proper amount of milk. This is the same practice as on conventional operations, except they only feed them individually for 6-7 weeks. As stated in part one, growth promoters and prophylactic biocides are used on conventionally raised heifers. Once a calf is weaned it moves to group feeding so feed and labor goes down significantly.

The time in the pre-weaned group for our study group ranged from 12 weeks to 17 weeks. On grass-fed dairies this time was up to 24 weeks. In our discussions with the farmers participating in this study, it was pointed out that one opportunity to reduce costs is to quicken the time to weaning, reducing the cost per day by 300%. A week less in the pre-weaned group would save an average of \$45/calf; however, this may negatively affect the calf's health. In discussions, the study group farmers gave as a reason for their extended feeding of milk wanting to keep the calves on an easily digestible diet to allow time for calves to develop immunity to certain parasites that affect newborns. (Conventional dairies can use synthetic drugs to treat these issues.) Another reason given by the participating organic dairy farmers was to allow for time for the calves' rumen to develop to allow the young animal's to utilize forage rather than high-priced organic calf starter feed.

Though some waste milk was used for feeding calves, we used the price for milk from the tank. Our reasoning was that if the waste milk didn't have a use on the farm, it's likely that the farmer wouldn't have kept the cows producing it.

Table 2. Feed and Labor Cost Per Day for Organic Dairy Heifers by Age Group, Organic Dairy Heifer Replacement Study, 2023.

Age	Feed & Labor / Day
Pre-Weaned	9.44
< 50 weeks	3.04
50-75 weeks	1.04
75-108 weeks	0.90

FEED COSTS

Since feed cost is the number one expense in raising dairy replacements, having accurate costs and weights are critical for good management. Feed costs include the obvious inputs of seed, soil preparation, and fertilizers, but the costs of harvesting, trucking, and storage of feed must also be considered.

The feed costs per heifer within the benchmarking farms in this study ranged from \$9.26/day to \$4.44/day. Project discussions provided the opportunity for farmers to see the factors influencing their individual farm numbers. For example, the farm with the highest cost trucked his harvest from fields far from the farm. That same farm had heifers on a farm four miles from the home farm, so feed was trucked daily to those heifers. The farm with the lowest cost raised all its own forage and grain.

The higher price of organic grain increases the total cost of organically raising heifers. That same high cost limits the amount of grain included by some farmers in their heifers' diets. In the first part of this report it was stated that maintaining a heifer's diet at 26-28 percent protein fed daily influences calf growth by 1-2 pounds per day. Lower amounts slow the growth of the animals, increasing the time needed to feed the calves to reach desired weight, thus increasing the cost of raising those animals.

The use of pasture by organic dairy farms during the summer months has both economic and growth benefits. Within the costs of raising a heifer there are fixed costs and variable costs. Fixed costs include: Buildings and Machinery. Variable costs include Feed and Labor. While determining the cost for heifers on pasture for the six month grazing season we kept the fixed cost the same and we reduced the cost of feed and labor by 50 percent for animals a year and older and 30 percent for those between six months to a year of age. This was based on research reported at the Department of Dairy Science, UW-Madisonⁱⁱ. Secondly, good pasture will meet or exceed the protein levels needed for good growth.

GROWTH RATE AND FEED EFFICIENCY

Each breed of dairy animal has its own targeted growth rate. The optimal weight gain/day for Holstein heifers is 1.8 lbs./day over two years. The calves in the study group did not achieve that level of gain. Some can be explained by the few crossbreeds in the groups. It is not equitable to compare the organically/pasture-raised dairy heifer to conventional heifers that are mostly raised in confinement. As part of a study I conducted comparing one group of conventional dairy heifers in confinement and one group on a grazing system for the summer, the physical movement of each group was monitored by pedometers. At the completion of the study, there was a visual difference in the body score between the two groups. Both groups achieved the desired growth rate but the pastured heifers had less fat at the tail heads. This was related to the exercise difference between the two groups. The pastured animals averaged 6,000 steps a day compared to less than 2,000 steps for the confined animals. That study is available online at <https://projects.sare.org/project-reports/one11-134/>.

Figures 2-4 show the daily growth rate, cost of feed/day, associated cost of labor/day, and total cost/day for various weight stages of heifer growth.

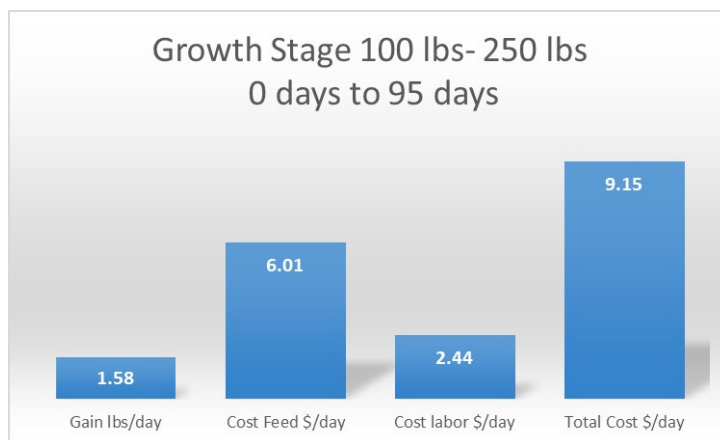


Figure 2. Daily growth rate, cost of feed/day, associated cost of labor/day, and total cost/day for heifer growth stage of 0-95 days, 100-250 lbs., Organic Dairy Heifer Replacement Study, 2023.

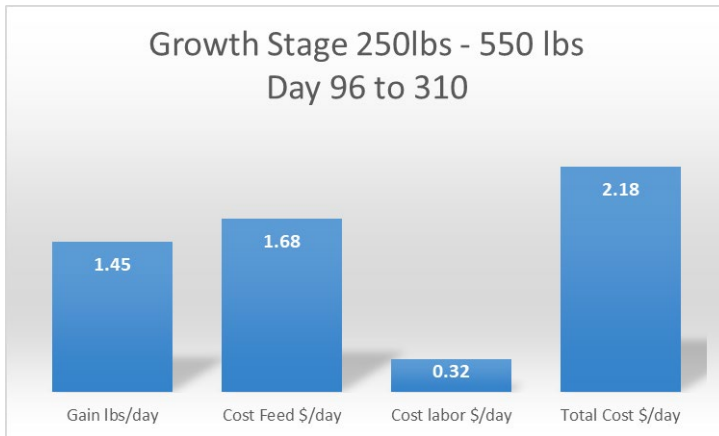


Figure 3. Daily growth rate, cost of feed/day, associated cost of labor/day, and total cost/day for heifer growth stage of 96-310 days, 250-550 lbs., Organic Dairy Heifer Replacement Study, 2023.

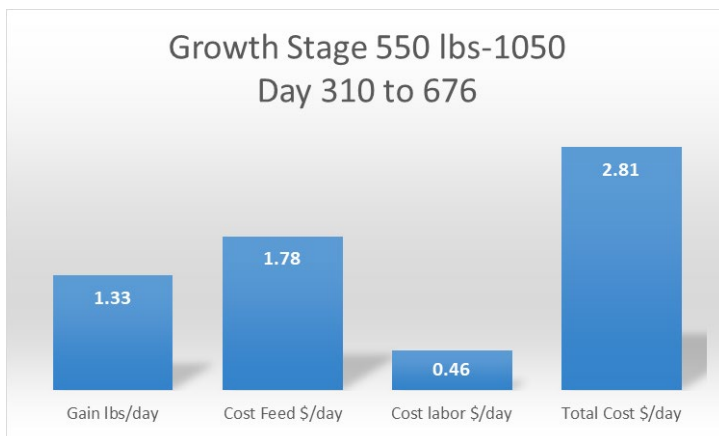


Figure 4. Daily growth rate, cost of feed/day, associated cost of labor/day, and total cost/day for heifer growth stage of 311-676 days, 550-1050 lbs., Organic Dairy Heifer Replacement Study, 2023.

A LESSON FROM HISTORY: Heifer Costs and USDA’s NOP Loophole

The National Organic Program (NOP)ⁱⁱⁱ of the United States Department of Agriculture has been a good force within the organic industry since its beginning in 2001. Becoming a certified organic dairy farmer in 1997, I appreciated changes brought about by the NOP, such as unifying of all certification standards instead of each certifier having their own. This allowed for a wider market for sales and purchases instead of just within farms certified by your certifier. Farms no longer needed to be certified by multiple certifiers. However, the process of collecting and analyzing the data for this study highlighted an unfair advantage created by a disparity in the USDA’s National Organic Program (NOP)^{iv}. This was the loophole in the organic dairy rule titled “Origin of Livestock”.

The “Origin of Livestock” rule was intended to keep animals on an organic dairy, once started, and always organically-raised from the last third of gestation. Extra wording in the rule made for some confusion but the loophole wasn’t exploited until 2015. At that point, a number of organic certifiers in the South and West approved organic certification to dairies that bought one-year-old non-certified organic heifers and then raised them organically for one year until they

freshened. Thousands of these heifers were brought into the market this way until the loophole was closed in 2021. Below is a graph that shows the \$700 feed and labor cost savings of these “loophole” heifers raised conventionally for the first year.

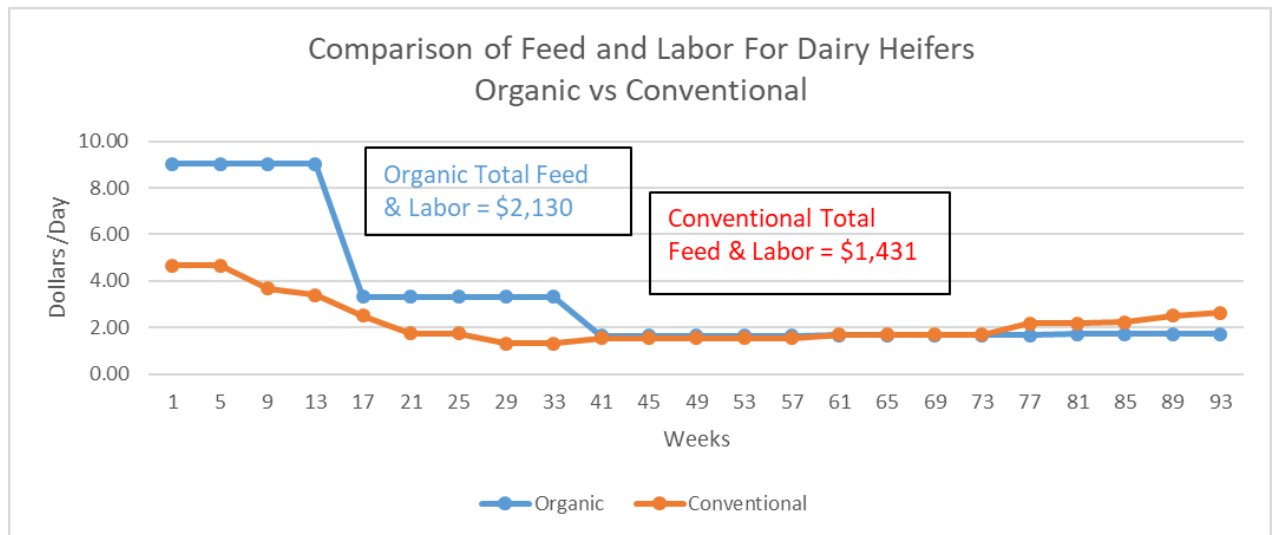


Figure 1. Comparison of Feed and Labor Costs for Dairy Heifers: Organic vs. Conventional, Organic Dairy Heifer Replacement Study, 2023.

SUMMARY

The margins on organic dairies have tightened during the last eight years. This will necessitate that organic dairy farmers become more efficient managers with such practices as monitoring and measuring all aspects of their farms’ cost and production. We hope this heifer replacement study will help them to make decisions to improve their dairy replacement enterprise.

ACKNOWLEDGEMENTS

Our thanks go to the 15 organic dairy farmers that allowed for the hours of data collection to make this project possible. Each farm received an individualized report of its numbers as well as the overall study results and benchmarking points.

Ashley Pierce with Holos Terra, LLC, assisted with data collection from organic dairy farmers in eastern New York. Mary Kate Mackenzie, Farm Business Management Specialist with Cornell University’s PRO-DAIRY Program and the Cornell Cooperative Extension South Central New York Regional Dairy Team, helped with engaging the participating farmers in discussion groups about this study and with providing the results of this study to the participating farmers and others, including an organic dairy discussion group she manages with farms using the Cornell Dairy Farm Business Summary.

The Northeast Dairy Business Innovation Center (NEDBIC) provided funding for this project. The NEDBIC supports dairy farmers and processors through grants, access to technical services, education, and events that promote the development, production, marketing, and distribution of regional dairy products. The NEDBIC serves 11 states from offices at the Vermont Agency of Agriculture, Food & Markets; learn more at <https://nedairyinnovation.com/>.

PROJECT SPINOFF: Project Publishes Organic and Alternative Cattle Health Care Manual

Pre-weaned calves are at the highest risk of dying. This is especially challenging for organically raised replacements. To address those challenges the Organic Dairy Heifer Replacement Study group used an array of oral vaccines to protect against E-coli, rotavirus, and coronavirus; nasal vaccines for IBR (infectious bovine rhinotracheitis) and PI-3 (parainfluenza type 3); and vitamins A, D, E and selenium to prevent deficiencies. To help other farmers who are looking for alternatives to synthetic drugs to keep their animals healthy, the Northeast Dairy Business Innovation Center-funded Organic Dairy Heifer Replacement Study has published the “Organic and Alternative Cattle Health Care Manual: A Guide for Treating Your Animals with Medicinal and Homeopathic Remedies.” Before using any treatments, synthetic or natural, seek the advice of a veterinarian. The manual can be downloaded at: Cornell Organic Dairy Initiative website. <https://blogs.cornell.edu/organicdairyinitiative/files/2023/09/Heifer-Health-Booklet.pdf>

ⁱ <https://dyson.cornell.edu/wp-content/uploads/sites/5/2020/09/Dairy-Replacement-Costs-Writeup-Final1-VD.pdf>

ⁱⁱ <https://datcp.wi.gov/Documents/WDE.Heifers-on-pasture.pdf>

ⁱⁱⁱ <https://www.ams.usda.gov/rules-regulations/establishing-national-organic-program>