

What is it costing you to raise your replacement dairy heifers?



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Raising replacement dairy heifers represents 15% of the cost of producing milk. In a survey of Wisconsin farms in 2015, farmers reported an average of \$2,510 to raise a heifer from birth to calving. These costs reflect not only expenses associated with feed, but also labor (both paid and unpaid labor), depreciation of buildings, and other out-of-pocket costs. This is higher than reported values from a survey of farms in the southeast, where many farms could not provide a cost for replacements raised on farm.

When purchasing heifers, replacement cost is easily determined since it reflects market price. Calculating the true cost of raising your own replacements is much more complicated. However, taking time to properly calculate heifer rearing costs can help identify areas of cost savings and overspending. Some costs are heavily integrated into the costs associated with the milking herd, and must be partitioned to the heifer enterprise to generate an accurate, farm-specific value. Without separating these costs from those of the milking herd, higher rearing costs can occur than realized. Generally, rearing costs are calculated by housing group, adjusted for number of days in each group, and then added together to get a total cost for raising a heifer to age of calving. Comparing costs from year to year allows one to see if costs remain similar or changes can be justified (i.e. changing grain prices or new barns). Comparing to neighbors or published values should be used with caution as these prices vary with management style.

Total Heifer Raising Expenses Breakdown

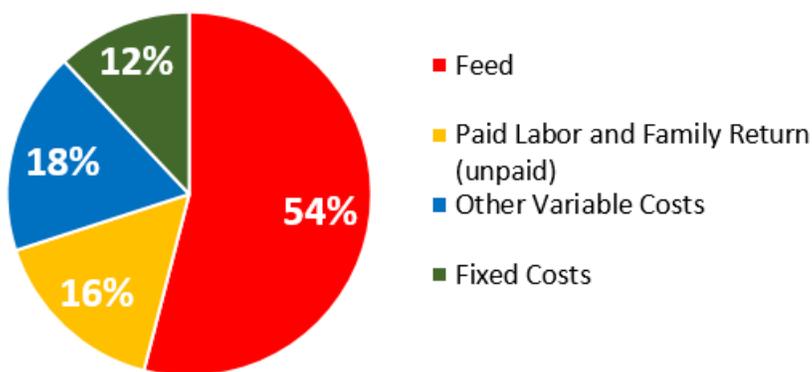


Figure 1: This chart outlines what percentages feed, labor, variable and fixed costs contribute to the total expense of raising replacement animals on Wisconsin farms in 2015.

Feed

In surveys collected on 93 farms from Wisconsin, Pennsylvania and New York, feed costs contributed 53 to 73% of the total rearing cost, reflecting regional and management differences.

Feed expenses need to reflect costs associated with:

- Amount of forages and grain mixes fed (Example calculation in Table 1)
- Additional losses associated with feeding and storage. (For example, storage losses for grain stored in a grain bin are around 2% but may be much higher if stored in a commodity shed.)

Table 1 illustrates how to calculate the feed cost for a 700 lb heifer fed 5 lbs of grain and the remainder of the diet being hay valued at \$100/ton. Feeding and storage losses were estimated at 2% for the grain mix and 10% for the hay fed.

Table 1: Example individual feed cost calculation for a 700 lb heifer.				
Feed	Amount Fed	Cost	Total cost/heifer/day	Your Farm
Commercial grain mix	5 lbs (2% feeding loss = 0.10 lbs) = total of 5.1 lbs	\$220/ton = \$0.11/lb	5.1 lbs x \$0.11 = \$0.56	
Hay	15 lbs fed (to account for 10% feeding and storage losses = total 16.5 lbs)	\$100/ton = \$0.05/lb	16.5 lbs x \$0.05= \$0.83	
TOTAL FEED COST			\$1.39/day or \$41.70/month	

*Forage prices should reflect market prices. For pasture, forage cost can be estimated at \$0.40 per head per day. Corn silage price can be estimated by multiplying corn grain price by 6 and adding an additional \$8-10 for harvest and storage.

Importance of Feed Cost per Pound of Gain

Once you have calculated feed cost per day for each age group, cost per pound of gain can be calculated to assess productivity. Change in weight of heifers over a time period is needed for this calculation. Heifer weight can be assessed by using a scale or by weighing trailers when moving animals. By dividing feed cost by daily weight gain, the cost per pound of gain can be calculated. Feed cost alone can be deceiving, but, by calculating feed cost per pound of gain we can look at efficiency of growth.

Higher daily feed cost may in turn reduce overall total rearing cost due to increased rate of gain, earlier conception, and earlier age at calving.

Labor- Paid and Unpaid

Labor contributes 16% of the total cost of raising a heifer. Looking at labor efficiency and barn/feeding system designs can help keep this cost under control. In a 2012 New York survey of dairy heifer labor costs, the number of heifers managed per person-hour varied tremendously by farm. They reported ranges of 6 to 21 pre-weaned heifers cared for per labor hour and 38 to 102 for post-weaned heifers. Obviously, as more heifers can be cared for per hour of labor, total labor costs decrease. This is illustrated in Table 2, where the top 20% in labor efficiency saved \$1.54 per pre-weaned heifer and \$0.20 per weaned heifer daily. Breaking down total labor cost, on a per head basis, highlights areas for improvement in labor efficiency and reducing overall heifer development costs. The goal is to find a balance between increasing the number of heifers per hour while still maintaining a high level of care.

Table 2: Labor costs per heifer based on age and labor efficiency developed from Cornell survey of 17 farm in New York (Karszes, 2012).			
	Bottom 20%	Median	Top 20%
Pre-weaned Heifer			
Number of Heifers per Hour*	6	11	21
Daily Labor Cost per Heifer**	\$2.16	\$1.12	\$0.62
Post-weaned Heifer			
Number of Heifers per Hour*	38	59	102
Daily Labor Cost per Heifer**	\$0.33	\$0.22	\$0.13
*Heifers per labor hour taken form Jason Karszes DAREXNET presentation, 2013			
**Costs assuming \$13.00 hourly wage			

After calculating labor cost, one could ask, “Are there ways to improve feeding efficiencies and other management tasks such that labor efficiency is improved, even within the current system?”

Check list of simple questions for better labor efficiency:

- Are feeding areas placed for the most efficient route of feed delivery?
- Are employees performing and scheduling tasks in the most efficient way?
- Are two employees completing a job that can be performed by only one?
- Is the barn layout (or pasture location) designed with efficiency in mind? Are there simple changes that would improve efficiency?

Do not Forget Unseen Costs of Family Labor

Accounting for labor and management time of the producer and their dependents is a commonly forgotten expense in heifer raising, since this is not a debit in a checkbook. This time commitment needs to be valued and incorporated into total labor cost. Generally, management labor is valued at a higher hourly wage than hourly-paid employees.

Variable Costs other than Feed

Variable costs, such as bedding, health supplies, electric, and water, represent 12.5 to 18% of the total rearing cost. The contribution of each individual cost may be small, but collectively they can influence overall rearing cost. Variable costs are commonly paid as one bill to the entire farm, making it difficult to assign what resources were utilized, specifically the heifers versus milking herd or other farm enterprises. Using assumptions can help quantify heifer usage of these resources. For example, in a Wisconsin study from 2015, electrical and fuel costs totaled \$32.76 for the full 2 years. Bedding was the third largest expense, at \$92.50 per heifer. A sample calculation of variable costs for an *11-13 month old heifer* is shown in Table 3. These costs are specific to each age group and will change with heifer age.

Table 3: Sample of selected daily variable costs for an 11-13 month dairy heifer adopted from survey of 17 farms in New York (Karszes, 2012).

	Daily Cost	Your Farm
Bedding- Straw	\$0.13	
Health- Vaccines, Antibiotics, Veterinary Expenses	\$0.06	
Breeding- Synchronization protocol supplies, Semen	\$0.07	
Utilities- Lights, Water (10 gal/heifer/day)	\$0.09	
Total Variable Cost per Heifer per Day	\$0.35	

Fixed Costs

Fixed costs are depreciable assets and consistent costs, such as calf hutches, barns, equipment and feeding pads. These are investments in the farm and debatably the easiest cost to determine. Depreciation of the resources heifers are using must be factored into the total replacement cost. A straight-line depreciation calculation is commonly used for this purpose, shown in Figure 2. Monthly depreciation can be divided by the number of heifers using the barn monthly and then added to an individual heifer rearing cost.

Figure 2: Straight line depreciation on \$65,000 barn with \$6,500 salvage value, 20 years of useful life.

$$\frac{(65,000 - \$6,500)}{20 \text{ years}} = \$2,925 / 12 = \$243 \text{ Monthly Depreciation}$$

Take Home Messages

- The first step in managing replacement heifer cost is calculating actual rearing cost.
- Breaking down large expenses on a per heifer basis provides more insight to inefficiencies and allows a comparison between years for the heifer enterprise.
- Labor and feed costs are the two largest factors in total heifer rearing costs.
- Evaluating ways to improve labor efficiency through changes in feedbunk or barn design, strategic chore planning, and education can help reduce the total cost for raising heifers.