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# *Staff Paper*

## The Economics of Heifer Raising Options

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## The Economics of Heifer Raising Options

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**Abstract:** As dairy farms grow and specialize in milking cows, one enterprise that may be removed from the dairy farm to allow for milk cow herd expansion is heifer raising. Custom heifer raising is increasingly common across the country and purchasing heifers may be preferred to raising heifers. However, these alternatives are not suitable for all dairy farmers. In this article, we examine heifer enterprise costs relative to using a custom raiser or purchasing heifers. We identify factors that should be considered in making the proper decision relative to the heifer enterprise.

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## **The Economics of Heifer Raising Options**

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As dairy farms grow and specialize in milking cows, one enterprise that may be removed from the dairy farm to allow for milk cow herd expansion is heifer raising. Custom heifer raising is increasingly common across the country and purchasing heifers may be preferred to raising heifers. However, these alternatives are not suitable for all dairy farmers. In this article, we examine heifer enterprise costs relative to using a custom raiser or purchasing heifers. We identify factors that should be considered in making the proper decision relative to the heifer enterprise.

The basic issues when considering whether an enterprise should be kept are whether profit will improve and whether using outside custom service or purchasing heifers is consistent with the dairy producer's methods and goals. Every dairy producer has made several decisions of this type. For example, the last time the chopper broke-down the decision may have been whether to invest in major repairs, replace it, or hire a custom chopper. The considerations that went into this decision were many. If the old chopper was repaired, how much would its life be extended? And, how reliable would it be? A new chopper purchase is a major long-term investment. For either the repaired or new chopper, the costs of the chopper, including investment and operating costs, must be compared to the cost of the custom chopper. Timing requirements are also important—that is, would the custom chopper show up when the silage was at the right stage for making high quality forage. Similarly, the heifer raising decision may be driven by the need for a new heifer facility or more room for the milking herd. Considerations like those that went into the chopper decision must be made before deciding whether to use a custom raiser or purchase heifers rather than raising them.

### *The cost of raising a heifer*

There are many sources of heifer budgets available and, as with any decision that has financial implications, those budgets should be modified with the values specific to a given operation. As part of the Dairy Profitability and Production Efficiency Project at Michigan State University (supported by Michigan Animal Industry Initiative funds) we collected detailed data for every enterprise on eight Michigan dairy farms in 1998. These farms were of all different sizes (40 cows to more than 400 cows) and geographically dispersed across lower Michigan. In this project, each enterprise was isolated and all costs allocated to enterprises so that the true cost of production could be determined. In the case of heifers, managerial accounting meant not only keeping track of the feed and labor that the heifers used but also the time each piece of machinery was used for heifer related purposes. The milk cow enterprise sold each heifer calf to the heifer enterprise as a newborn. The heifer enterprise raised the heifers and sold late pregnant (springing) heifers back into the milking herd. Each transaction was done at the current market price and validated by the producers. Importantly, we calculated the total economic cost of

production, which included unpaid labor and management as well as a charge for all capital, borrowed as well as owner equity, used in that enterprise. Notice that this is very different than cash costs or the commonly used partial enterprise discounting method. Using these procedures, we derived a heifer budget. Five of the eight dairy farms did not use a custom heifer raiser in 1998, and we use those average costs in this article. Because the heifers were of all different ages and the farms were followed for a single year, an inventory adjustment was made, and all expenses are expressed as average cost per heifer month. That is, the costs and revenues were adjusted for the fact that older heifers were worth more than younger heifers at the end of the year. In order to put the comparisons on equal footing, we chose 24 months as the age to first calving.

The heifers were sold back to the milking herd at an average price of \$1,292 which translates to \$54 per heifer month. The range of heifer prices was \$1,100 to \$1,500, which reflected what the farm operators determined heifers were worth as they entered the milking herd. The costs of production are divided into variable and fixed costs. The largest costs of raising heifers are the same as for the milking herd—feed and labor (Table 1). The feed costs averaged about \$23/heifer month (remember, these are across all ages of heifers) while labor averaged nearly \$11/heifer month. “Calf purchases” includes purchasing the heifer calves from that farm’s milk cow herd while “outside heifer purchases” are heifers purchased from other operations. The “other” category includes various expenses such as repairs, utilities, and interest on working capital invested in heifer raising. The remaining expense categories are straightforward with total average variable cost equal to \$51.41/month. Fixed costs include depreciation on facilities, equipment, interest, insurance, taxes, and a charge for management. The fixed expenses averaged \$11.53/heifer month for a total average cost of \$62.94/heifer month. Assuming a 24-month age to first calving, the average cost to raise a heifer for these farms is about \$1,511. Note that this age assumption is perhaps a bold one because the age varied both within and across farms but is necessary for comparison.

The minimum and maximum columns in Table 1 are across all five farms for that cost category. That is, the lowest average total cost to raise a heifer was \$58.82/heifer month while the maximum cost was \$68.34/heifer month (these totals are not equal to the sum of each cost category which are themselves minimums or maximums). Those farms that had lower costs in some categories (e.g., labor) often were higher in other cost categories (e.g., equipment).

Even with the range in farm size and location, the farms examined were remarkably consistent in almost every cost category. The net average loss per heifer across these farms was \$219 (\$1,511 - \$1,292). This reflects the difference between what the producers felt the heifer was worth as a springing heifer and what it cost to raise the heifer to 24 months.

#### *Other heifer raising options and considerations*

A dairy farm need not raise all their own heifers. Alternatives to consider include purchasing outside heifers or using a custom heifer raiser. Nearly every farm purchases

heifers at some time. Cost, quality, availability are key considerations. The value of the late pregnant heifers is related to the current and expected milk price. For example, the recent higher-than-expected milk prices resulted in expensive heifers. If the heifer calves can be sold as newborns and late pregnant heifers efficiently purchased, this may be a preferred option to raising your own.

With an increasing demand for custom heifer raising from expanding dairy farms, a number of individuals and firms have stepped up to offer this service. The exact contract terms, including price, vary across individuals. Charges can be on a per day basis, sell and later buy back the heifers, a charge per pound of gain, charges for feed plus yardage, a set payment for a heifer, and so on. To simplify the discussion we will consider a set charge per day while the custom raiser has the heifer. Often these charges are high before weaning (e.g., before 45 days of age), decrease during some period (e.g., prior to breeding to about 450 days of age), and increase later when the heifer is near calving. One price that is often used as a benchmark is \$1.50/day per heifer, and we use that cost for comparison.

If the custom heifer raiser receives the heifer at 3 days of age (the starting date is usually negotiable) and keeps the heifer to 24 months (730 days), the heifer raising cost totals \$1,095 per heifer. Additional charges may include hauling, vaccines, and breeding. Assuming that these charges total \$75/heifer, the total heifer raising cost is \$1,170/heifer. Above, we calculated an average cost of \$1,511/heifer to raise them at home.

In order to compare the costs from Table 1 to the custom heifer raiser, some adjustments must be made. Note that the total heifer cost in Table 1 includes the initial cost of the calf (or purchased heifer if from off the farm). Subtracting out the cost of the calf and/or outside heifers purchased, which averaged \$164/heifer on the farms analyzed, the actual heifer raising cost is \$1,347 (\$1,511 – \$164). An adjustment must also be made to the cost of using the custom heifer raiser—add in an interest cost to reflect the money paid to the custom raiser and the initial cost of the heifer calf. That is, recall that the total cost to raise a heifer includes a return to capital invested. Since the heifer raiser will be paid and an investment tied up in the heifer, a similar charge should be added to the custom heifer raiser charges to make the comparison correct. With an average interest charge of 9.25%, the interest charge totals \$135. Adding this charge to the \$1,170 makes the total cost \$1,305. This is \$42/heifer less than the average cost found for raising the heifers on farm.

With potential savings of \$42 per heifer, a producer might move to utilize the custom heifer raiser. However, there are many considerations aside from cost. Consider what will be done with the labor and facilities that will be freed up by sending the heifers elsewhere? If cows can be put into those facilities, chances are that revenues will increase. If those facilities are not valuable in any other use or that alternative use (e.g., beef steers) is less profitable than heifers, the producer may wish to keep the heifers to make use of the facilities. Similarly, if the labor cannot be used elsewhere, the dairy producer might be further ahead to raise the heifers on-farm.

Also, consider that farm cash flow will likely change if a custom heifer raiser is utilized. Utilizing a custom heifer means that a check will be required, perhaps each month. Many of the costs in raising heifers in Table 1 are non-cash (e.g., use of excess facilities) and some fixed costs like depreciation on equipment. Of course, the dairy producer may be foregoing expenses if the heifers are not on-farm. However, many of these expenses may be home-grown feed and unpaid family labor.

Beyond cost are other considerations we have to this point glossed over with respect to the custom heifer raiser. Some of these issues are highlighted in Table 2. Who is responsible for mortality? How is heifer performance monitored? What happens if a heifer is growing too slow—or too fast? These issues should be handled in the contract but may be areas where the dairy farmer is giving up some control. It is also possible that the custom raiser might do a better job raising heifers than the dairy producer.

Finally, especially in this day and age, consider the bio-security issues. Often the custom heifer raiser can be matched up with a dairy farmer on a one-to-one basis and outside heifers are not a concern. However, smaller dairy herds or farms desiring to use a custom raiser on a limited basis may find it difficult to partner with custom heifer raisers willing to limit themselves to heifers from a single dairy herd.

To conclude, even if it costs an average of \$1,511 to raise a heifer, it may be a better use of dairy producer resources than to pay a total cost of \$1,464 per heifer (\$1,165 cash cost + \$164 calf cost + \$135 interest cost in our example) to use a custom heifer raiser. In this case, an economist would say that the other concerns such as biosecurity and control over heifer management practices are worth more than the potential monetary gain from using the custom heifer raiser. A similar comparison can be made when considering purchasing heifers versus raising them. In either case, true cost of production is required for an informed decision.

**Table 1. Heifer Raising Costs, Michigan 1998 (5 farms).**

	<b>Average</b>	<b>Minimum</b>	<b>Maximum</b>
<b>Variable costs</b>			
		(\$/heifer month)	
Feed	23.13	20.55	27.07
Labor	10.95	6.03	15.02
Breeding	0.81	0.41	2.08
Vet. + Medicine	0.92	0.51	1.38
Supplies	1.64	0.37	2.56
Facilities	0.88	0.17	2.29
Machinery + Equip.	1.95	1.19	2.18
Calf Purchases	5.73	3.34	8.68
Outside heifers	1.09	0.00	4.32
Other	4.32	3.50	5.21
<b>Total variable costs</b>	<b>51.41</b>	<b>43.65</b>	<b>57.89</b>
<b>Fixed costs</b>			
Equipment	2.36	0.70	4.14
Interest +insurance	4.51	3.18	5.51
Buildings and improvements	2.22	0.28	4.56
Management fee	0.90	0.71	1.08
Overhead	1.55	0.56	2.40
<b>Total fixed costs</b>	<b>11.53</b>	<b>7.33</b>	<b>16.36</b>
<b>Total costs</b>	<b>62.94</b>	<b>58.82</b>	<b>68.34</b>



**Table 2. Some considerations when evaluating heifer enterprise options**

	<b>Raise own heifers</b>	<b>Custom raiser</b>	<b>Purchase heifers</b>
<b>Advantages</b>	<ul style="list-style-type: none"> <li>- maintain control</li> <li>- biosecurity risk minimized</li> <li>- genetics are known</li> </ul>	<ul style="list-style-type: none"> <li>- frees facilities</li> <li>- frees labor</li> <li>- can specialize on milking herd</li> <li>- genetics are known</li> </ul>	<ul style="list-style-type: none"> <li>- frees facilities</li> <li>- frees labor</li> <li>- can specialize on milking herd</li> </ul>
<b>Disadvantages</b>	<ul style="list-style-type: none"> <li>- investment in facilities</li> <li>- labor costs</li> <li>- cannot specialize on milking herd</li> </ul>	<ul style="list-style-type: none"> <li>- cash outflow</li> <li>- lose management control/quality</li> <li>- potential for conflicts</li> </ul>	<ul style="list-style-type: none"> <li>- fluctuating availability</li> <li>- cost and effort to acquire heifers</li> <li>- genetics risk</li> <li>- biosecurity risks</li> <li>- higher price risk</li> </ul>
<b>Unknown*</b>	<ul style="list-style-type: none"> <li>- heifer quality</li> <li>- labor productivity</li> <li>- cost advantage</li> </ul>	<ul style="list-style-type: none"> <li>- biosecurity risk</li> </ul>	<ul style="list-style-type: none"> <li>- genetics unknown</li> </ul>

\* Unknown means that it depends on the individual farm situation and should be carefully considered.