

Raising replacements isn't cheap

A dairy's replacement program is one of its largest expenses.

Eight New York dairies invested \$1,580 per heifer, on average.

By Jason Karszes

A dairy's replacement enterprise offers opportunities to manage costs, improve efficiencies and enhance the quality of animals entering a herd. To see where opportunity lies, it pays to look at a cost study of heifer replacement programs on eight New York dairies (Table 2), done in 2003.

The study doesn't represent the average costs of raising dairy replacements for all dairies. These eight dairies have above average herd size and high quality replacement programs (Table 1). Still the data can help you evaluate your heifer program.

The average total investment of \$1,580 in a heifer at calving represents all the replacement program's costs, the initial value of the calf and charges for interest on investment and non-performance. Raising costs averaged \$1,429 per animal; the animal's initial value averaged \$151.

The inter-quartile range reflects the middle, not the high and low extremes (Table 2). For these eight dairies, that inter-quartile cost to raise replacements was \$1,215 to \$1,646.

The largest expenses by percentage of the total raising costs were:

- Feed = 49%, averaging \$1.03 per day.
- Labor = 17%, averaged 37 cents per day.
- Interest on investment = 7%.
- Building ownership = 5%.

Cost per day per animal

Average raising cost per heifer per day was \$2.10, excluding the calf's initial value. Half of the farms were within the \$1.77 to \$2.74 range.

Changes in feed intake and labor requirements as heifers grow created significant difference in cost per day. Total cost per day per animal at different ages averaged:

- Milk feeding = more than \$4.00
- Weaning to breeding = \$1.75
- Breeding to close up = \$2.02
- Before calving = \$2.81.



Cost per pound of gain

The average raising cost per pound of gain was \$1.18, with an inter-quartile range of 98 cents to \$1.48. This cost was based on an average of 1.78 pounds of gain per day, with an inter-quartile range of 1.69 to 1.82 pounds. Some specifics:

- 58 cents per pound of gain for feed costs.

Range: 53 to 64 cents.

- 21 cents per pound of gain for labor.

- 39 cents for all remaining expenses.

Looking at different age groups, the average cost per pound of gain:

- \$2.01 per pound of gain prior to weaning.

- 85 to 90 cents from weaning

to breeding.

- \$1.25 to \$1.30 from breeding to calving.

Feed and labor at 67% of the raising costs had the largest impact on costs per pound of gain. Labor costs started at a little more than 75 cents per pound of gain during milk feeding, dropping to less than 15 cents per pound after weaning.

Expenses by stage of growth

The study broke down each period of growth – birth to weaning, weaning to puberty, puberty to breeding and breeding to calving – by weight, average cost per pound of gain and average total raising costs per heifer (Table 3).

Some results include:

- Birth to 200 pounds: 14% of the total costs but only 8% of the weight gain. Average cost per

Table 1. Profile of 8 New York dairies in replacement study, average

Number of heifers	975
Age at first calving, months	22.5
Calving weight, lbs.	1,302
Ave daily gain	1.78
All heifers/labor hr.	41
Preweaned heifers/labor hr.	9
Post-weaned heifers/labor hr.	66
Total investment	\$1,580
% non-completion rate	7.85
Cost/worker	\$34,482

FYI

■ Jason Karszes is a senior Extension associate in the Department of Applied Economics and Management with the Cornell University PRO-DAIRY program.

■ His paper "Dairy Replacements Programs: Cost & Analysis" was excerpted with his permission and from "Dairy Calves and Heifers: Integrating Biology and Management" (NRAES-175.) 2005. Natural Resource, Agriculture, and Engineering Service, Ithaca, NY. Tel: (607) 255-7654. Website: www.nraes.org

pound of gain: \$1.81.

- Weaning to puberty: 29% of total cost and 38% of the animal's growth. Average cost per pound of gain: 81 cents.

- Breeding stage: 11% of the cost and 12% of growth. Average cost per pound of gain: \$1.04.

- Bred animals: 46% of the cost and 35% of growth. Average cost per pound of gain: \$1.46.

Labor efficiency

Labor, the second largest expense associated with raising heifers, showed the greatest range. The study used three measures to evaluate labor costs.

1. Heifers per labor hour. This measures how many dairy replacements are taken care of in one labor hour. The higher the value, the more labor efficient the enterprise is. Housing systems played a significant role in labor efficiency. Results include:

- 41 heifers, the average number per labor hour.

- 55.7 heifers, the average of the four highest efficiency dairies.

- 26.3, the average for the four lowest efficiency dairies.

The study also looked at heifers per labor hour for pre-weaned and post-weaned animals:

- 9 pre-weaned heifers per labor hour. The difference between the top and bottom groups of dairies for pre-weaned heifers per labor hour ranged from 6.7 to 11.4.

- 66 post-weaned heifers per labor hour. The difference for the post-weaned heifers was even greater, ranging from an average of 36.3 heifers per labor hour for the lowest group and 96.4 heifers on average for the highest group.

2. Worker equivalents, based on one person working 55.2 hours per week for 50 weeks. An average of 3.1 worker equivalents was used in the heifer enterprise on these eight dairies. Using the average of 975 heifers, the average high efficiency group needed 2.31 worker equivalents compared to 4.9 for the average low efficiency group.

3. Total labor cost. It averaged \$248 per animal for the eight dairies, with the high efficiency dairies averaging \$153 and the low efficiency ones averaging \$343.

As heifers per labor hour increased, worker equivalents and total costs of labor per animal decreased. If a dairy improves labor efficiency in its heifer enterprise, it will require less labor, thereby cutting heifer raising costs.

Does it pay?

For dairies analyzing their replacement programs and thinking about changing how they

Table 2. Total costs to raise heifers

	Average	Percent	Inter-quartile Range	
Feed, total	\$699	49	\$660	\$714
Grown	\$479	--	\$438	\$565
Purchased	\$224	--	\$149	\$301
Labor	\$248	17	\$133	\$391
Bedding	\$62	4	\$29	\$99
Health	\$46	3	\$28	\$68
Breeding	\$41	3	\$30	\$55
Trucking	\$5	0	\$0	\$5
Insurance	\$1	0	\$0	\$4
Machinery operation	\$19	1	\$11	\$22
Machinery ownership	\$22	2	\$11	\$28
Building operation	\$21	1	\$8	\$43
Building ownership	\$77	5	\$53	\$123
Manure storage operation	\$0	0	\$0	\$1
Manure storage ownership	\$4	0	\$0	\$6
Manure spreading	\$49	3	\$21	\$74
Custom boarding	\$0	0	\$0	\$0
Professional services & fees	\$2	0	\$0	\$3
Nonperformance expenses	\$32	2	\$12	\$45
Interest on daily investment	\$100	7	\$88	\$113
Total	\$1,429	-	\$1,215	\$1,646

Eight New York dairies, 2003

raise heifers – or whether to contract them out – here are questions to consider:

- What is the value of being able to feed the lowest quality feed to heifers, not the milking herd?

- How much does it really cost to grow all the feed for both the milking herd and replacements?

- How much does it cost to handle manure properly? Do you have the land and equipment resources to do that?

- Are other cost areas offsetting what synergies you might have by operating both your dairy and your heifer enterprise? For example, are your labor costs higher because of raising heifers in poorly designed facilities?

Determining your dairy replacement program's costs is the first – and essential – step in analyzing your heifer enterprise. ■

Table 3. Heifer raising costs by stage of growth
Per Pound of Gain

	Stage of Growth			
	Birth - 200 lbs.	200-700 lbs.	700-850 lbs.	800-calving
Feed	\$0.652	\$0.421	\$0.500	\$0.777
Labor	\$0.657	\$0.152	\$0.168	\$0.175
All other costs	\$0.501	\$0.238	\$0.368	\$0.479
Total	\$1.811	\$0.812	\$1.036	\$1.460

By Total Investment

	Stage of Growth			
	Birth - 200 lbs.	200 - 700 lbs.	700 - 850 lbs.	800 - calving
Feed	\$71.75	\$210.75	\$75.05	\$343.13
Labor	72.31	75.93	25.27	78.23
All other costs	55.16	119.22	55.19	227.23
Total	\$199.22	\$405.91	\$155.51	\$648.59

% of Total Cost

% of Total Growth

Eight New York dairy farms, 2003.