Raising Dairy Herd Replacements

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Having good replacements for cows leaving the milking herd each year is a key to maintaining and increasing herd production. One of the decisions facing dairy producers is whether to raise or purchase replacement heifers. To raise replacements requires the use of equity for additional facilities, feed, and labor. Producers expanding their operations may find it advantageous to put their equity into cows and purchase replacement heifers or have them raised by custom growers. However, even when producers choose to raise their own replacement heifers, it is useful to treat the heifers as a separate enterprise so that the economic strengths and weaknesses of their operation can be identified.

Budget Information

The costs and returns in the budget are on a per-heifer-sold basis. Costs are total economic costs and include operator labor and all opportunity costs. Returns are based on selling 95 percent of the heifers as bred replacements (springers), 2.5 percent as nonbreeders, and 2.5 percent that are culled as yearlings. Death loss is assumed to be 10 percent, which raises the cost of the heifer calves purchased.

Feed costs account for more than one-half of the cost of raising a replacement heifer. Table 1 shows the feed costs associated with different stages of growth. Feed cost has been adjusted to account for death loss of calves and heifers sold early (yearlings). Labor costs are based on 15 hours per heifer from birth to 24 months. Labor requirements are intensive the first 3 months of age. Subsequently, only routine labor is needed for feeding, tending, and observing the heifers with labor requirements increasing as heifers reach breeding age. Machinery costs include fuel used for observing heifers on pasture, while building repairs include costs of repairing buildings and fences. Interest on variable costs is computed on one-half of the total variable costs at the current interest rate for 2 years. Similarly, interest is charged on the cost of the heifer calf for 2 years.

Depreciation is based on the total original cost less the salvage value of buildings and equipment on a per-heifer basis divided by the estimated life. The budget value is based on a total investment of buildings and improvements of $389 per head and an investment of $95 per head for equipment. The useful life is assumed to be 20 years for buildings and 10 years for equipment. A salvage value of 10 percent is assumed on buildings and equipment. Interest is charged on one-half the average investment [(initial cost + salvage value) ÷ 2] for buildings and equipment at a rate of 10 percent. Insurance and taxes on buildings and equipment is based on the original cost times 0.25 percent for insurance and 1.5 percent for taxes (buildings only). The annual cost of buildings and equipment (depreciation, interest, taxes, and insurance) is multiplied by two to cover a 24-month budget.

Net return on assets is the percentage return on investment capital (both borrowed and equity). This measure has been converted to an annual basis to enable comparisons to be made between enterprises as well as investment alternatives.

Table 1. Feed Requirements for Raising Replacement Heifer (birth to 24 months).*

	Birth to 6 months		6 to 12 months**		12 to 24 months	
Feed Item	**lbs or ac**	**Dollars**	**lbs or ac**	**Dollars**	**lbs or ac**	**Dollars**
Milk replacer @ $65.00 per cwt.	53	$34.13				
Calf starter (18%) @ $13.00 per cwt.	183	23.79				
Calf grower (16%) @ $10.00 per cwt.	360	36.00				
Corn gluten feed @ $2.72 per cwt.			193	$5.26	1,046	$28.47
Corn, cracked @ $4.28 per cwt.			139	5.93	878	37.51
Soybean hulls @ $71.50 per ton			302	10.79	921	32.94
Alfalfa hay @ $100.00 per ton	333	16.63				
Grass hay @ $50.33 per ton	203	5.10	338	8.49	2,194	55.21
Pasture @ $14.00 per acre			2.5	35.00	9.8	136.50
Minerals (w/lasalocid) @ $17.50 per cwt.			24	4.20	94	16.38
FEED COST PER PERIOD		$115.64		$69.67		$307.01
TOTAL FEED COSTS (Birth to 24 months)		$492.32				

** Pound per acre and dollar amounts have been adjusted to account for death loss and yearling heifer sales.*
*** Pound per acre and dollar amounts reflect an average of drylot and grazing diets throughout the year.*

COST-RETURN PROJECTION—DAIRY HERD REPLACEMENT

	Projected Budget	Your Farm
VARIABLE COSTS PER HEIFER SOLD:		
1. Feed — birth to 24 months of age (Table 1)	$ 492.32	$ ______
2. Labor (15 hrs @ $10.80 per hr)	162.00	______
3. Veterinary, drugs, and supplies	20.00	______
4. Breeding costs for A.I. services	40.00	______
5. Transportation and marketing costs	10.00	______
6. Utilities, fuel, and oil	15.00	______
7. Building and equipment repairs	9.68	______
8. Miscellaneous	15.00	______
9. Interest on 1/2 variable costs for 24 months	76.40	______
A. TOTAL VARIABLE COSTS	$ 840.39	______
FIXED COSTS PER HEIFER SOLD:		
10. Depreciation on buildings and equipment	46.30	______
11. Interest on buildings and equipment	58.05	______
12. Insurance and taxes on buildings and equipment	14.08	______
B. TOTAL FIXED COSTS	$ 118.43	______
C. TOTAL COSTS PER HEIFER SOLD (A + B)	$ 958.83	______
RETURNS PER HEIFER		
13. Springer heifer: 0.95 hd × $1,350/hd	$ 1,282.50	______
14. Cull heifer: 0.025 hd × 1,300 lbs @ $52.78/cwt	17.15	______
15. Yearling heifer: 0.025 hd × 725 lbs @ $70.74/cwt	12.82	
16. Less initial value of heifer: $150/hd + 10.0% death loss	-165.00	
17. Less interest on heifer calf investment	-66.00	______
D. GROSS RETURNS PER HEIFER SOLD	$ 1,081.48	______
E. RETURNS OVER VARIABLE COSTS (D - A)	$ 241.08	______
F. RETURNS OVER TOTAL COSTS (D - C)	$ 122.65	______
G. SPRING HEIFER BREAKEVEN PRICE, $/head:		
18. To cover variable costs	$ 1,026.75	______
19. To cover total costs	$ 1,151.42	______
H. TOTAL COSTS PER HEIFER SOLD (Line C)		
20. Total cost per head per day	$ 1.33	______
21. Total cost per pound of gain	$ 0.82	______
I. ASSET TURNOVER (D/(Assets × 2))[1]	83.3%	______
J. ANNUAL NET RETURN ON ASSETS ((F + 9 + 11 - 17)/(Assets × 2))[1]	24.90%	______

[1] *Total assets = (value of heifer calf plus building and equipment investment)*

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