

Raising Dairy Herd Replacements

Department of Agricultural Economics



Kansas State University Agricultural Experiment Station and Cooperative Extension Service

Kevin C. Dhuyvetter
Agricultural Economist
Farm Management

Micheal Brouk
Animal Scientist, Dairy

John F. Smith
Animal Scientist, Dairy

Joseph P. Harner, III
Agricultural Engineer
Grain and Livestock Systems

Having good replacements for the cows that leave 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 therefore 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 over one-half of the cost of raising a replacement heifer. The feed costs associated with different stages of growth are shown in Table 1. 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 quite intensive the first three 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 operating costs at the current interest rate for two years. Similarly, interest is charged on the cost of the heifer calf for two 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 8 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 because the budget covers a 24 month time period.

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 other investment alternatives

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

Feed Item	Birth to 6 months		6 to 12 months**		12 to 24 months	
	lbs or ac	Dollars	lbs or ac	Dollars	lbs or ac	Dollars
Milk replacer @ \$80.00 per cwt.	53	\$42.00				
Calf starter (18%) @ \$15.50 per cwt.	183	28.37				
Calf grower (16%) @ \$14.00 per cwt.	360	50.40				
Corn gluten feed @ \$3.78 per cwt.			193	\$7.30	1,046	\$39.51
Corn, cracked @ \$4.69 per cwt.			139	6.50	878	41.12
Soybean hulls @ \$83.25 per ton			302	12.57	921	38.35
Alfalfa hay @ \$120.67 per ton	333	20.06				
Grass hay @ \$57.33 per ton	203	5.80	338	9.67	2,194	62.88
Pasture @ \$14.59 per acre			2.5	36.48	9.8	142.25
Minerals (w/lasalocid) @ \$19.00 per cwt.			24	4.56	94	17.78
FEED COST PER PERIOD		\$146.63		\$77.07		\$341.90
TOTAL FEED COSTS (Birth to 24 months)		\$565.60				

* Pound/acre and dollar amounts have been adjusted to account for death loss and yearling heifer sales.

** Pound/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
RETURNS PER HEIFER		
1. Springer heifer: 0.95 hd × \$1,750/hd	\$ 1,624.50	_____
2. Cull heifer: 0.025 hd × 1,300 lbs @ \$51.95/cwt	16.88	_____
3. Yearling heifer: 0.025 hd × 725 lbs @ \$62.69/cwt	11.36	_____
4. Less initial value of heifer: \$150/hd + 10.0% death loss	-165.00	_____
5. Less interest on heifer calf investment	-52.80	_____
A. GROSS RETURNS PER HEIFER SOLD	\$ 1,434.95	_____
COSTS PER HEIFER SOLD:		
6. Feed — birth to 24 months of age (Table 1)	\$ 565.60	\$ _____
7. Labor (15 hrs @ \$10.00 per hr)	150.00	_____
8. Veterinary, drugs, and supplies	20.00	_____
9. Breeding costs for A.I. services	40.00	_____
10. Transportation and marketing costs	15.00	_____
11. Utilities, fuel, and oil	18.75	_____
12. Building and equipment repairs	9.68	_____
13. Miscellaneous	15.00	_____
14. Depreciation on buildings and equipment	52.09	_____
15. Interest on buildings and equipment	42.57	_____
16. Insurance & taxes on building & equipment	14.08	_____
B. SUBTOTAL	942.77	_____
17. Interest on 1/2 operating costs for 24 months	66.72	_____
C. TOTAL COSTS PER HEIFER SOLD	\$ 1,009.49	_____
D. RETURNS OVER TOTAL COSTS (A-C)	\$ 425.46	_____
E. SPRING HEIFER BREAK-EVEN PRICE, \$/head	\$ 1,262.15	_____
F. TOTAL COSTS PER HEIFER SOLD (Line C)		
18. Total cost per head per day	\$ 1.40	_____
19. Total cost per pound of gain	\$ 0.86	_____
G. ASSET TURNOVER (A ÷ (Assets × 2))¹	110.6%	_____
H. ANNUAL NET RETURN ON ASSETS		
((D + 15 + 17 - 5) ÷ (Assets × 2)) ¹	45.3%	_____

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

Publications from Kansas State University are available on the World Wide Web at: <http://www.oznet.ksu.edu>.

Contents of this publication may be freely reproduced for educational purposes. All other rights reserved. In each case, credit Kevin C. Dhuyvetter et al., *Raising Dairy Herd Replacements*, Kansas State University, October 2002.

Kansas State University Agricultural Experiment Station and Cooperative Extension Service

MF-399

October 2002

It is the policy of Kansas State University Agricultural Experiment Station and Cooperative Extension Service that all persons shall have equal opportunity and access to its educational programs, services, activities, and materials without regard to race, color, religion, national origin, sex, age or disability. Kansas State University is an equal opportunity organization. Issued in furtherance of Cooperative Extension Work, Acts of May 8 and June 30, 1914, as amended. Kansas State University, County Extension Councils, Extension Districts, and United States Department of Agriculture Cooperating, Marc A. Johnson, Director.