



Dairy Enterprise

Department of Agricultural Economics



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Land

The dairy enterprise requires minimum land if feed is purchased rather than produced. In Kansas, there are few strictly dry lot operations as most Kansas producers choose to provide some grazing, especially for dry cows and replacements. Land for feed production per cow ranges from 1½ to 2 acres for hay and silage production, 1 to 2 acres for pasture, and 1 to 2 acres for grain production.

Feed

Dairy cows require high-quality forage and grain. The amount and cost of feed, as shown in Table 1, indicates why feed is the most important factor in the cost of production.

Concentrates or grain requirements increase as milk production increases. The concentrate requirements for various levels of milk production assuming good quality hay and silage are shown in Table 1.

Labor

The amount of labor needed on individual farms will vary according to the degree of mechanization, size of enterprise, skill of workers, and management ability of the operator.

The direct labor requirements presented in Table 2 apply to the milking, feeding, manure disposal, and care of the animals including replacements. The labor requirements do not include time spent in crop production and harvesting or machinery repairs.

Capital

Capital requirements for the dairy enterprise vary greatly depending on the herd size and degree of mechanization. The capital needed to establish a new 100-cow dairy operation with modern equipment using dry lot methods is estimated to be \$1,307 per cow for buildings and \$1,393 per cow for equipment, fences, feeding facilities, and manure disposal. The current value of dairy facilities on established dairy farms is less than the cost of new facilities.

Investment in livestock includes the dairy cow and one-third of a replacement heifer.

Production Level

Costs per unit and net returns in livestock production are highly dependent on production levels. The following estimated budget includes three different production levels. Production levels vary for a number of reasons, including livestock quality or genetics, weather, input levels, and management. The three production levels included in this estimated budget reflect production variability due to weather and management as opposed to the quality of the livestock, since livestock values are held constant. Budgeting at multiple production levels can help producers examine the financial risk of a livestock enterprise that is directly related to production risk.

Heart of America DHIA Summary of Holstein Herds, Grouped By Production Level, 1995

Item	1	2	3	4
1. Average milk per cow per year (lbs)	13,740	16,648	18,601	21,267
2. Cows per herd, average	71	83	91	100
3. Percent days in milk	83	86	87	89
4. Value of milk (\$)	1,685	2,008	2,243	2,562
5. Feed costs (\$)*	811	905	1,006	1,070
6. Income overfeed cost (\$)	874	1,103	1,237	1,492
7. Feed cost/cwt. milk (\$)	5.90	5.44	5.41	5.03

*Does not include replacements. Prices of homegrown feeds established by DHIA.

Information Included in Budget

- Feed:** includes feed for the dairy cow plus one-third of the cost of raising a replacement heifer to 2 years of age. Table 1, page 4.
- Labor:** estimated to be 40 hours per cow.
- Veterinary, drugs, supplies:** costs for prevention and treatment of disease.
- Breeding charge:** includes semen, artificial insemination services, and supplies.
- Marketing and hauling costs:** includes milk hauling, marketing fees, milk supplies, and assessments that are deducted from the milk check plus commission and yardage for cull cows.
- Utilities:** share of the farm electricity, telephone, fuel, and water expenses for the dairy enterprise.
- Fuel, oil, and auto expense:** share of the farm car and trucks plus gasoline, diesel, and oil for scraping and hauling manure and for hauling feed to the dairy herd and replacements. The cost does not include fuel for raising crops.
- Building and equipment repairs:** includes all repairs for dairy facilities, equipment, and fences plus the share of repairs for tractors and trucks used for the dairy enterprise.
- Miscellaneous:** share of farm organization dues, farm magazines, office supplies, and DHIA costs (DHIA costs are \$15 per cow although all farms are not on DHIA).
- Interest on variable costs:** calculated on one-half of variable costs at an interest rate of 10 percent.
- Depreciation on buildings and equipment:** based on the original investment per cow of \$1,307 in dairy facilities at an average life of 15 years and machinery investment per cow of \$1,393 with an average life of 8 years.
- Interest on buildings and equipment:** interest on facilities, equipment, and machinery is calculated on one-half the original investment (\$2,700 per cow) at an interest rate of 10 percent.
- Insurance and taxes on buildings and equipment:** averages approximately 0.25 and 1.5 percent of original investment, respectively.
- Interest on breeding stock:** calculated on the investment in dairy livestock. Livestock investment is \$1,100 for a dairy cow plus \$300 ($0.33 \times \900) for a replacement heifer for a total of \$1,400 per cow.
- Insurance on breeding stock:** Averages approximately 1 percent of dairy cattle original investment of \$1,400 per cow.
- Milk sales:** based on three different levels of pounds of milk sold per cow. DHIA records need to be 600 to 700 pounds higher because all of the milk produced is not sold, due to colostrum and other non-salable milk.
- Calf sales:** based on an 80-percent-raised calf crop with one-half being steers.
- Cull cow sales:** assumes one-third of the cows are culled each year.

**COST-RETURN PROJECTION — PER DAIRY COW AT THREE DIFFERENT LEVELS
OF POUNDS OF MILK SOLD (REPLACEMENTS RAISED)**

	Production levels (lbs milk sold)			
	17,700	19,100	22,900	Your Farm
VARIABLE COSTS PER PIG SOLD:				
1. Feed (from Table 1)	\$ 1,303.50	\$1,369.41	\$ 1,434.56	_____
2. Labor (38 hrs × \$10.80 per hr)	410.00	410.00	410.00	_____
3. Veterinary and drugs	70.00	80.00	90.00	_____
4. Breeding charge*	30.00	35.00	40.00	_____
5. Marketing, hauling costs, and supplies	210.00	225.00	247.00	_____
6. Utilities*	69.00	75.00	83.00	_____
7. Fuel, oil, and auto expense*	30.00	30.00	30.00	_____
8. Building and equipment repairs	125.00	125.00	125.00	_____
9. Miscellaneous	17.00	17.00	17.00	_____
10. Interest on ½ variable costs @ 10%	113.23	118.32	123.83	_____
A. TOTAL VARIABLE COSTS	\$ 2,377.73	\$2,484.73	\$ 2,600.39	_____
FIXED COSTS PER COW:				
11. Depreciation on buildings and equipment	261.26	261.26	261.26	_____
12. Interest on buildings and equipment ¹ @ 10%	135.00	135.00	135.00	_____
13. Insurance and taxes on buildings and equipment @1.75%	47.25	47.25	47.25	_____
14. Interest on breeding stock @ 10%	140.00	140.00	140.00	_____
15. Insurance on breeding stock @ 10%	14.00	14.00	14.00	_____
B. TOTAL FIXED COSTS	\$ 597.51	\$ 597.51	\$ 597.51	_____
C. TOTAL COSTS PER COW (A + B)	\$ 2,995.24	\$3,082.84	\$ 3,197.90	_____
RETURNS PER COW				
16. Milk sales @ \$13.00 cwt	\$ 2,301.00	\$2,483.00	\$ 2,977.00	_____
17. Calves sold: 40% × \$60.00 cwt	24.00	24.00	24.00	_____
18. Cull cows 1,300 lbs × ⅓ × \$43.50 cwt	188.50	188.50	188.50	_____
D. GROSS RETURNS PER COW	\$ 2,513.50	\$2,695.50	\$ 3,185.50	_____
E. RETURNS OVER VARIABLE COSTS (D–A)	\$ 135.77	\$ 210.77	\$ 585.11	_____
F. RETURNS OVER TOTAL COSTS (D–C)	\$ –481.74	\$ –387.34	\$ –12.40	_____
G. TOTAL RETURN PER HUNDREDWEIGHT OF MILK SOLD (D ÷ CWT)	\$ 14.20	\$ 14.11	\$ 13.91	_____
H. TOTAL COST PER HUNDREDWEIGHT MILK SOLD (C ÷ CWT)	\$ 16.92	\$ 16.14	\$ 13.96	_____
I. ASSET TURNOVER (D ÷ INVESTMENT) ²	61.30%	65.74%	77.70%	_____
J. NET RETURN ON INVESTMENT [(lines F + 10 + 12 + 14) ÷ INVESTMENT] ²	–2.28%	0.15%	9.43%	_____

* Based on 1996 Farm Management Association farms plus inflation from 1996 to 1998.

¹ One-half the original cost of buildings and equipment at an interest rate of 10 percent.

² Investment equals total value of breeding herd and buildings and equipment.

**Table 1. Feed Requirements and Costs for Three Levels of Milk Production Per Cow Per Year.
Includes Costs of Raising Replacements**

			Milk Production Level			
	Low		Average		High	
Produced (lbs)	18,650		20,100		22,900	
Sold (lbs)	17,700		19,100		21,700	
Feed Requirements						
Feed	lbs	Dollars	lbs	Dollars	lbs	Dollars
Corn/Grain Sorghum @ \$5.20 cwt.	7,475	\$388.70	8,175	\$425.10	8,875	\$461.50
Protein @ \$10.75 cwt	2,850	306.38	3,100	333.25	3,350	360.13
Hay @ \$100 per ton	4,500	225.00	4,400	220.00	4,300	215.00
Corn Silage @ \$23.25 per ton	17,550	204.02	17,160	199.49	16,770	194.95
Calcium and Phosphorus @ \$0.25 per lb.	177	44.25	195	48.75	211	52.75
Trace Mineral @ \$0.22 per lb.	55	12.10	58	12.76	61	13.42
Vitamin Premix @ \$0.50 per lb.	20	10.00	22	11.00	24	12.00
BiCarb @ \$0.25 per lb.	48	12.00	53	13.25	57	14.25
Milk Replacer @ \$0.85 per cwt.	8.3	8.30	8.3	8.30	8.3	8.30
Calf Starter @ \$17.00 per cwt.	83	14.11	83	14.11	83	14.11
Calf Grower @ \$14.00 per cwt.	83	11.62	83	11.62	83	11.62
Pasture @ \$15.40 per month	1	15.40	1	15.40	1	15.40
Feed Processing @ \$0.50 per cwt.	10,325	51.62	11,275	56.38	12,225	61.13
TOTAL FEED COST		\$1,303.50		\$1,369.41		\$1,434.56

**Table 2. Estimated Total Labor Requirements Per Cow
for Dairy Systems (Hours)**

Herd size (cows)	Loose housing and milking parlor
<50	54
50-100	50
Over 100	37

Table 3. Non-Feed Cost Per Cow—1996*

Hired Labor	\$ 167.13
Marketing and Breeding	47.43
Machine Hire	10.46
Dairy Expense	198.68
Veterinary and Drugs	69.87
Utilities	74.13
Fuel, Oil, Auto Expense	29.89
Repairs	123.55
Farm org. fees, misc.	13.80
Interest Paid	80.45
Personal Property Tax	2.29
Real Estate Tax	7.99
Insurance	18.69
Depreciation and Real Estate Tax	90.17
Operator's Capital @ 8%	162.05
Operator's Labor	<u>182.26</u>
Total Non-Feed	\$1,270.85

* Average for Farm Management Association members in 1996.
Herds averaged 18,352 pounds of milk sold per cow.

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