



Beef Cow-Calf Enterprise

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The beef cow-calf enterprise plays an important role in the livestock economy of the state. Cows perform well on poor quality forages such as corn or sorghum stalks and other crop residues when properly supplemented after calving. Commercial cows are especially adapted to areas where there is an abundance of native grass.

Feed

A beef cow-calf enterprise requires about 5 tons of forage on a dry matter basis or 5.7 tons of hay equivalent per cow per year. This feed level includes feed for the cows, bulls, replacement stock, and calves to weaning (Table 1). Crop residue and winter wheat can be utilized in the fall to provide part of the feed requirements.

In the southern part of Kansas, year-round native pasture can be utilized with some supplemental protein or alfalfa hay in the winter. In eastern Kansas, brome and fescue can be used for extended grazing. However, good management dictates that 1 to 1½ tons of harvested forage be available during the winter months.

Labor

Labor requirements for a beef cow-calf enterprise vary considerably depending upon the size of the herd and how they are handled (Table 2). Labor required to produce feed or pasture for the livestock is not included in the annual labor requirement to manage the cow-calf enterprise.

Capital

Land required to produce a year-round feed supply varies from 3 to 5 acres in eastern Kansas, between 7 and 10 acres in the Flint Hills, and 10 to 15 acres in western

Kansas. Land costs are included in the price of feed charged to the livestock.

Capital requirements for livestock equipment and facilities can vary greatly. The budget assumes hay is used for winter feed. The required facilities include livestock buildings, feed storage, corrals, and working facilities. Required equipment includes feed handling and feeding equipment, watering equipment, manure handling equipment, and transportation equipment. The estimated new capital investments for a 100-cow enterprise are shown in Table 3.

Production Levels and Costs

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. The production levels in the cow-calf budget are assumed to vary due to differences in weaned calf percentages. Varying the weaned calf percentage affects the number of calves available for sale (Table 5).

The budget for each production level includes a charge or opportunity cost for all resources used by the beef cow enterprise. Interest on buildings and equipment is assumed on one-half of the original cost. This budget assumes steer calves are sold at 560 pounds and heifer calves at 540 pounds.

Information Included in Budget

1. **Pasture:** charged at average rental rates for cows and calves, bulls, and replacement heifers (Table 1). Rental rates are a proxy for the total production cost of pasture including a land charge (see Table 1).
2. **Crop residue:** see Table 1.
3. **Hay–forage:** see Table 1.
4. **Grain:** no grain fed.
5. **Protein–minerals:** see Table 1.
6. **Labor:** estimated to be 7.4 hours per cow (see Table 2).
7. **Veterinary, drugs, supplies:** costs for treatment and disease prevention.
8. **Marketing costs:** include only if these costs have not been deducted from line D.
9. **Utilities, fuel, and oil:** gasoline, diesel, and oil used when observing cattle, hauling feed, scraping and hauling manure, and hauling livestock. Utilities are the beef cow enterprise’s share of the farm telephone, electricity, gas, and water expenses.
10. **Building and equipment repairs:** share of expenses for repairs on livestock machinery and equipment, fences, corrals, and feed bunks.
11. **Breeding charge:** includes breeding livestock lease and artificial insemination charges.
12. **Miscellaneous:** includes small tools, ear tags, etc., plus livestock’s share of farm organization fees, magazines, and office supplies.
13. **Interest on variable costs:** calculated on one–half of variable costs at the current interest rate of 10 percent.
14. **Depreciation on buildings and equipment:** based on original investment per cow of \$88 in buildings and feed storage with a life of 20 years; and equipment investment of \$264 per cow with a life of 10 years. All buildings and equipment are assumed to have a 35 percent salvage value at the end of the useful life.
15. **Depreciation on bull:** used to capture loss in value of bull ($\$2,100 \text{ purchase} - \$900 \text{ sale value} = \$1,200$ depreciation $\div 4 \text{ years of life} = \300 depreciation per year $\div 25 \text{ cows per year} = \12 per cow per year).
16. **Interest on buildings and equipment:** interest is charged on one–half the original investment ($\$352$ per cow) in facilities, feed storage, and livestock machinery at an interest rate of 10 percent.
17. **Insurance and taxes on buildings and equipment:** averages approximately 0.25 percent and 1.5 percent of original investment, respectively.
18. **Interest on breeding stock:** calculated on the investment in livestock. Livestock investment is \$600 per cow plus 16 percent times \$500 for replacement heifer plus 4 percent of \$2,100 bull for a total of \$764 per cow.
19. **Insurance on breeding stock:** averages approximately 1 percent of the investment in livestock.
20. **Steer sales:** see Table 5.
21. **Heifer sales:** see Table 5.
22. **Cull cow sales:** based on 16 percent culling rate (Cull cow sales plus insurance payments).
23. **Average gross return per hundredweight needed to cover variable costs:** [total variable costs (line A) - cull cow sales (line 22)] $\div$ [average weaning weight $\times$ (weaning percentage - 0.16)].
24. **Average gross return per hundredweight needed to cover total costs:** [total costs (line C) - cull cow sales (line 22)] $\div$ [average weaning weight $\times$ (weaning percentage - 0.16)].
25. **Hundredweight weaned:** $\{[(\text{weaning percentage} \div 2) \times \text{steer weight}] + [(\text{weaning percentage} \div 2) \times \text{heifer weight}]\} \div 100$.

COST-RETURN PROJECTION—BEEF COW-CALF ENTERPRISE (PER COW)

	Weaning Percentage			Your Farm
	82%	88%	94%	
VARIABLE COSTS PER COW:				
1. Summer Pasture (6 months)	\$126.42	\$126.42	\$126.42	\$
2. Crop Residue	7.50	7.50	7.50	
3. Hay—Forage	120.00	120.00	120.00	
4. Grain				
5. Protein and Mineral	26.00	26.00	26.00	
6. Labor (6.40 hrs. × \$10.80/hr.)	69.10	69.10	69.10	
7. Veterinary, Drugs, and Supplies	14.00	14.00	14.00	
8. Marketing Costs	8.00	8.00	8.00	
9. Utilities, Fuel, and Oil	16.00	16.00	16.00	
10. Building and Equipment Repairs	25.00	25.00	25.00	
11. Breeding Charge				
12. Miscellaneous	5.00	5.00	5.00	
13. Interest on 1/2 Variable Costs @ 10%	20.85	20.85	20.85	
A. TOTAL VARIABLE COSTS	\$437.87	\$437.87	\$437.87	
FIXED COSTS PER COW:				
14. Depreciation on Bldgs. and Equip.	\$ 20.02	\$ 20.02	\$ 20.02	
15. Depreciation on Bull	12.00	12.00	12.00	
16. Interest on Bldgs. and Equip. ¹ @ 10%	17.61	17.61	17.61	
17. Insurance and Taxes on Bldgs. and Equip. @ 1.75%	6.16	6.16	6.16	
18. Interest on Breeding Stock @ 10%	76.40	76.40	76.40	
19. Insurance on Breeding Stock @1%	7.64	7.64	7.64	
B. TOTAL FIXED COSTS	\$139.84	\$139.84	\$139.84	
C. TOTAL COSTS PER COW (A+B)	\$577.71	\$577.71	\$577.71	
RETURNS PER COW				
20. Steers: 560 lbs. (see Table 5.)	\$218.12	\$234.08	\$250.04	
21. Heifers: 540 lbs. (see Table 5.)	114.75	128.52	142.29	
22. Cull Cows: 1,050 × 16% × \$46.25/cwt.	77.70	77.70	77.70	
D. GROSS RETURNS PER COW	\$410.57	\$440.30	\$470.03	
E. RETURN OVER VARIABLE COSTS (D-A)	\$-27.30	\$2.43	\$ 32.16	
F. RETURN OVER TOTAL COSTS (D-C)	\$-167.14	\$-137.41	\$-107.68	
G. AVERAGE GROSS RETURN NEEDED/CWT.				
23. To Cover Variable Costs (A ÷ 25)	\$ 99.22	\$ 90.95	\$ 83.96	
24. To Cover Total Costs (C ÷ 25)	\$137.74	\$126.26	\$116.55	
H. TOTAL FEED COSTS (Lines 1–5)	\$279.92	\$279.92	\$279.92	
25. Cwt. Weaned	4.51	4.84	5.17	
26. Feed Costs Per Cwt.	\$ 62.07	\$ 57.84	\$ 54.14	
I. ASSET TURNOVER (D ÷ INVESTMENT) ²	36.79%	39.45%	42.12%	
J. NET RETURN ON INVESTMENT ((F+13+16+18) ÷ INVESTMENT) ²	-4.68%	-2.02%	-0.64%	

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

²Investment equals total value of breeding stock and buildings-equipment.

Table 1. Feed Requirements Per Cow Unit

Pasture			
Cow and calf	\$15.50/acre x 7.1 acres	=	\$110.05
Replacement	\$15.50/acre x 4.8 acres x 16%	=	11.90
Bull Share	\$15.50/acre x 7.2 acres x 4%	=	4.46
	Pasture per Cow Unit	=	\$126.41
Harvested Forage			
Cow (Dry)	18 lbs. hay/day x 60 days	=	1,080 lbs.
Cow (Lact.)	34 lbs. hay/day x 60 days	=	2,040 lbs.
Heifer	19 lbs. hay/day x 120 days		
	x 16%	=	365 lbs.
Bull	30 lbs hay/day x 120 days x 4%	=	145 lbs.
	Hay Equivalent per Cow Unit	=	3,630 lbs.
	@ 65/ton	=	\$120.00
Crop Residue			
	Per Cow Unit 60 days = 1,500 lbs. @ \$.005/lb.	=	\$ 7.50
Protein Supplement			
Cow	90 days x 1 lb.	=	90 lbs.
Heifer	180 days x 1 lb. x 16%	=	30 lbs.
	Per Cow Unit	=	120 lbs.
	@ \$10.75/cwt.	=	\$ 12.90
Salt and Mineral Mix			
	60 lbs. @ \$22.00/cwt.	=	\$ 13.20

Table 2. Annual Labor Requirements

Cow Numbers	Hours Per Cow
Under 40	14
40 – 80	11
80 – 120	8
Over 120	5

Table 3. Capital Investment (Except Land) per Cow Unit—100 Cows

Buildings and Improvements	\$8,760
Cow-herd Share of Equipment	\$26,465
Total Investment	\$35,225
Investment Per Cow	\$352.25

Table 4. 1996 Total Costs Per Beef Cow—Average 221 Farms, Kansas Farm Management Association¹

Item	Per Cow
Feed	\$261.76
Hired Labor	9.29
Veterinarian and Drugs	13.41
Fuel, Oil	9.31
Utilities	6.63
Marketing and Breeding	7.90
Repairs, Auto and Truck Expense	22.49
Machine Hire	2.32
Miscellaneous	4.35
Interest Paid	19.54
Personal Property Tax	.94
General Farm Insurance	3.31
Real Estate Tax	4.15
Depreciation	14.67
Operator's Capital	57.63
Operator's Labor	50.85
TOTAL	\$487.62

¹Average number of cows was 103, with an average weight of calves sold of 576 pounds.

Table 5. Calf Sales Per Beef Cow

Weaning Percentage	82	88	94	Price/cwt
Steer (560 lbs.)	.41	.44	.47	\$95.00
Heifer (540 lbs.)	.25	.28	.31	85.00