

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, along with crop residues and winter forages.

This budget uses projected 2002 input and output prices for illustrative purposes. The budget is based on a typical spring calving cow herd. Individual producers should use their own prices, and adjust production factors to match their individual situation. For example, a typical fall calving herd would be expected to have higher feed costs, but also a higher gross return than that depicted in this example.

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 used in the fall to provide part of the feed requirements.

In southern Kansas, year-round native pasture can be used 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 accounted for by 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 200-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 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 that is directly related to production risk of a livestock enterprise. 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 4).

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 per AUM 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 5 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. **Facilities 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 8 percent.
14. **Depreciation on facilities and equipment:** based on original investment per cow of \$135 in facilities and feed storage with a life of 20 years; and equipment investment of \$123 per cow with a life of 10 years. All facilities 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 facilities and equipment:** interest is calculated based on the following formula $[(\text{Total investment per cow} + \text{salvage value (35\% of investment value)} \div 2) \times 8\% \text{ interest rate.}]$
17. **Insurance and taxes on facilities 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:** $[\text{total variable costs (line A)} - \text{cull cow sales (line 22)}] \div [\text{average weaning weight} \times (\text{weaning percentage} - 0.16)]$.
24. **Average gross return per hundredweight needed to cover total costs:** $[\text{total costs (line C)} - \text{cull cow sales (line 22)}] \div [\text{average weaning weight} \times (\text{weaning percentage} - 0.16)]$.
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)	\$ 117.51	\$ 117.51	\$ 117.51	\$
2. Crop Residue	7.50	7.50	7.50	
3. Hay—Forage	91.34	91.34	91.34	
4. Grain				
5. Protein and Mineral	25.00	25.00	25.00	
6. Labor	50.00	50.00	50.00	
7. Veterinary, Drugs, and Supplies	21.00	21.00	21.00	
8. Marketing Costs	9.50	9.50	9.50	
9. Utilities, Fuel, and Oil	21.25	21.25	21.25	
10. Facilities and Equipment Repairs	31.00	31.00	31.00	
11. Breeding Charge				
12. Miscellaneous	7.00	7.00	7.00	
13. Interest on 1/2 Variable Costs	15.24	15.24	15.24	
A. TOTAL VARIABLE COSTS	\$ 396.34	\$ 396.34	\$ 396.34	
FIXED COSTS PER COW:				
14. Depreciation on Facilities and Equipment	\$ 12.39	\$ 12.39	\$ 12.39	
15. Depreciation on Bull	12.00	12.00	12.00	
16. Interest on Facilities and Equipment ¹	13.95	13.95	13.95	
17. Insurance and Taxes on Facilities and Equipment	4.52	4.52	4.52	
18. Interest on Breeding Stock	61.12	61.12	61.12	
19. Insurance on Breeding Stock	7.64	7.64	7.64	
B. TOTAL FIXED COSTS	\$ 111.63	\$ 111.63	\$ 111.63	
C. TOTAL COSTS PER COW (A+B)	\$ 507.97	\$ 507.97	\$ 507.97	
RETURNS PER COW				
20. Steers: 560 lbs (see Table 4.)	\$ 229.39	\$ 246.18	\$ 262.96	
21. Heifers: 540 lbs (see Table 4.)	125.33	140.37	155.41	
22. Cull Cows: 1,050 lbs × 16%	83.29	83.29	83.29	
D. GROSS RETURNS PER COW	\$ 438.02	\$ 469.85	\$ 501.67	
E. RETURN OVER VARIABLE COSTS (D - A)	\$ 41.68	\$ 73.50	\$ 105.33	
F. RETURN OVER TOTAL COSTS (D - C)	\$ -69.95	\$ -38.12	\$ -6.30	
G. AVERAGE GROSS RETURN NEEDED/CWT.				
23. To Cover Variable Costs	\$ 86.24	\$ 79.05	\$ 72.97	
24. To Cover Total Costs	\$ 116.99	\$ 107.24	\$ 98.99	
H. TOTAL FEED COSTS (Lines 1 – 5)	\$ 241.35	\$ 241.35	\$ 241.35	
25. Cwt. Weaned	4.51	4.84	5.17	
26. Feed Costs Per Cwt.	\$ 53.51	\$ 49.87	\$ 46.68	
I. ASSET TURNOVER (D ÷ INVESTMENT) ²	42.84%	45.96%	49.07%	
J. NET RETURN ON INVESTMENT				
((F+13+16+18) ÷ INVESTMENT) ²	1.99%	5.10%	8.22%	

¹Original cost of facilities and equipment plus salvage value divided by 2, times at an interest rate of 8 percent.

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

Table 1. Feed Requirements Per Cow Unit

Pasture		
Cow and Calf	\$17.07 / AUM × 6.0 AUM	\$ 102.42
Replacement	\$17.07 / AUM × 4.0 AUM × 16%	10.92
Bull Share	\$17.07 / AUM × 6.1 AUM × 4%	4.17
	Pasture Per Cow Unit	\$ 117.51
Harvested Forage		
Cow (Dry)	18 lbs Hay/day × 60 days	1,080 lbs
Cow (Lact.)	34 lbs Hay/day × 60 days	2,040 lbs
Heifer	19 lbs Hay/day × 120 days × 16%	364.8 lbs
Bull	30 lbs Hay/day × 120 days × 4%	144 lbs
	Hay Equivalent per Cow Unit	3,628.8 lbs
	@\$50.34/ton	\$91.34
Crop Residue		
Per Cow Unit	60 days= 1,500 lbs \$.005	\$ 7.50
Protein Supplement		
Cow	90 days × 1 lb.	90 lbs
Heifer	180 days × 1 lb. × 16%	28.8 lbs
	Per Cow Unit	118.8 lbs
	@ \$178.49/ton	\$ 10.60
Salt and Mineral Mix		
	60 lbs @ 24.00/cwt.	\$14.40

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 — 200 Cows

Facilities and Improvements	\$27,075
Cowherd Share of Equipment	\$24,600
Total Investment	\$51,675
Investment Per Cow	\$258.38

Table 4. 2000 Total Costs Per Beef Cow (Sell Calves < 625 lbs) —Average 150 Farms, Kansas Farm Management Association¹

Item	Per Cow
Feed	\$299.83
Hired Labor	\$12.36
Veterinarian and Drugs	\$21.42
Fuel, Oil	\$12.45
Utilities	\$8.79
Marketing and Breeding	\$19.24
Repairs, Auto and Truck Expense	\$31.16
Machine Hire	\$2.07
Miscellaneous	\$4.63
Interest Paid	\$25.18
Personal Property Tax	\$0.99
General Farm Insurance	\$5.39
Real Estate Tax	\$2.06
Depreciation	\$19.37
Operator's Capital	\$83.15
Operator's Labor	\$57.14
TOTAL	\$605.23

¹Average number of cows was 119, with an average weight of calves sold of 557 pounds.

Table 5. Calf Sales Per Beef Cow

Weaning Percentage	82	88	94	Price/cwt
Steer (560 lbs)	0.41	0.44	0.47	\$99.91
Heifer (540 lbs)	0.25	0.28	0.31	\$92.84

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