

Economic Tools to Evaluate Culling Decisions for Breeding Cattle and Replacements

Overview

- The extreme drought in South Texas in 2011 forced producers to make tough choices about how to handle their investments in breeding cattle.
- What has not changed are the economic and financial analysis tools for making sound buying or selling decisions for breeding cattle.
- Deciding whether to keep or sell a cow, to keep a heifer for replacement, or to sell the potential replacement depends on that animal's future value in your herd compared to its current market value.

Overview cont.

- How do you decide what a cow is worth in your herd?
- The answer is not simply what you must pay over the scale for a cow of similar age and quality.
- In fact, a cow is just like a machine: she has both productive value and salvage value. A cow is actually worth all of the income she can earn over her lifetime, including her salvage value as a cull cow, less the expenses she incurs.
- The net cash flow a cow produces over her lifetime depends on future calf prices, the ranch's cost structure, and the cow's eventual salvage value.
- The timing of income and expenses related to a cow is also important in determining its value because money has earning power of its own.

Overview cont.

- The capital budget is a primary economic analysis tool for determining the value of an animal in your herd.
- The capital budget calculates the economic feasibility of the investment by using the net cash flow from the enterprise budget, which includes the expected cost and revenue for the time the animal is in the herd.
- The budgeting tools used in Table 1 will help you calculate the maximum feasible bid price for a cow – the net present value.

Table 1. Cow Bid Price Estimate Calculator Example

Steer Weight	500	Cull Cow Sale Weight (Pounds/Head)					1,000	Net Present Value (NPV) (\$0.09)	
Heifer Weight	475	Number of Calving Opportunities (Years)					7		
Pair Price	\$1,195	Discount Rate (%)					5.00		
Year	2011	2012	2013	2014	2015	2016	2017		
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7		
Calf Crop or Weaning %	100	100	100	100	100	100	100		
Steer Price (\$/Cwt)	\$140	\$150	\$155	\$133	\$130	\$126	\$126		
Heifer Price (\$/Cwt)	\$134	\$144	\$149	\$127	\$124	\$120	\$120		
Cull Cow Price (\$/Cwt)	\$0	\$0	\$0	\$0	\$0	\$0	\$0		
Gross Receipts	\$668	\$717	\$741	\$634	\$620	\$600	\$600	\$0	
Cow Operating Cost/Year	\$400	\$550	\$550	\$550	\$550	\$550	\$550		
Net Above Operating Cost	\$268	\$167	\$191	\$84	\$70	\$50	\$50	\$0	
Net Cash Flow	\$268	\$167	\$191	\$84	\$70	\$50	\$50	\$0	
Cow Salvage Value	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$600.00	\$0.00	

Table 1. Cow Bid Price Estimate Calculator Example cont.

Pre-Tax Cash Flows								
Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	
(\$1,195.00)	\$268.00	\$167.00	\$191.00	\$84.00	\$70.00	\$50.00	\$650.00	\$0.00

- Comments regarding this investment scenario. The analysis of this scenario is on a pre-tax basis.
- The negative net present value indicates that the price of \$1,195 per head is too high.
- This investment has an internal rate of return of 5.0%.
- This investment has a payback period of 7 years.
- The positive cash flows across the planning horizon indicate that this investment is financially feasible.

Table 1. Overview

- Table 1 shows how this model can be used to calculate an expected price for a cow-calf pair based on projected prices and costs.
- This example represents the expected market price for a cow-calf pair under a best-case scenario.
- It assumes that steers will be weaned at 500 pounds and heifers at 475 pounds, and that this cow will remain in the herd from 2011 through 2017, weaning a calf each year.
- Steer, heifer and cull cow prices are assumed to decline from current levels and to bottom in 2017.
- The cost to maintain this cow is assumed to be \$550 per year, and these expenses are prorated for the first year at a total of \$400.
- Expected cash flow is discounted by 5 percent to account for uncertainty and the time value of money.

Table 1 Overview cont.

- In this scenario, a bid price of \$1,195 per pair equals a net present value near zero. This bid value leads to an internal rate of return of 5 percent during the 7 year period.
- These results indicate that a bid of \$1,195 per pair would be the maximum feasible bid price in this example. At any price above \$1,195, the producer would be better off selling the pair.
- If drought increases the maintenance cost in the first year, it would be even more advantageous to sell the cow-calf pair at any price above \$1,195.

Table 1. Overview cont.

- In early May 2011, young to middle-aged cow-calf pairs with 100 to 300 pound calves were selling in South Texas for \$900 to almost \$1,100 per pair. The high end of this range is slightly below the maximum feasible bid price of \$1,195.
- Under normal circumstances, the producer would be better off keeping the pair at those sub-\$1,100 prices.
- However, current drought conditions make it likely that the prorated operating cost for 2011 is too low. In our example, there is only \$95 per pair in current value to cover any additional costs due to the drought. If \$95 would not cover extra expenses, it would be better to sell the pair now. Also, if the cow missed weaning a calf in any subsequent year, the model would generate a sell signal.

Table 1. Overview cont.

- This example shows how a cattle producer can use an economic model to evaluate alternatives when faced with selling decisions in response to drought.
- For tools like the one in Table 1 to yield accurate data on which to base decisions, producers must use data that is specific to their operation. Producers should manipulate production, cost and output price assumptions to see how those changes would affect the decision variables.
- The expected value of different types of cows in your herd depends on factors that are uncertain. Because of the uncertainty, many people consider this type of planning a waste of effort. The future seldom unfolds exactly as planned, and expecting current conditions to prevail is unreasonable. The planning process, however, need not yield an exact prediction to be valuable.