

Evaluating Drought Forced Culling Decisions

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The extremely dry conditions that we are experiencing in most of Texas are forcing producers to make very tough choices about what to do with their breeding cattle. This is the latest in a string of these types of problems, much like what we saw in the spring and summer of 1996, again in 1998 as well as 2006 and 2008. However, market conditions and expectations of future prices were much different than today. In the spring of 1996 we were faced with the lowest cattle prices since the mid-1970's, along with a grain and forage prices that were historically very high, and set to move higher. Today, cull cow and calf prices are much stronger even though we face higher grain and forage prices.

What is the same now, as in 1996, are the economic and financial analysis tools and how they should be used to make a sound disinvestment or investment decision for breeding cattle. Decisions such as:

- keeping or selling a cow,
- keeping a heifer for replacement,
- selling the potential replacement heifer,
- how much feed you can afford to buy to keep that cow or heifer in the herd

hinge on the expected value of that type of animal in your herd when compared with what the market is offering you for that type of animal. These decisions can be analyzed with this simple tool.

How do you decide what a cow is worth in your herd? The answer is not always as simple as what you have to pay for the same age and quality cow over the scale at your local auction barn. In fact, a cow is just like a machine in a factory, and as such she has both a productive value and a salvage value. She is really worth the sum of all the cash she can earn over her lifetime less all the expenses she creates, which includes her salvage value as a cull cow. As you would expect, the net cash flows the cow can generate over her life time depends on the future prices of calves, the ranch's cost structure and the eventual salvage value of the cow. Not only does the size of the cash flows impact the value of the cow, the timing of when the cow generates income and expenses is important in determining the cow's value because money has earning power of its own.

The primary economic analysis tool to determine the value of the animal in your herd is the capital budget. The capital budget takes the net cash flow calculated in the enterprise budget, which includes revenue and cost information expected to be generated over the time the animal is in the herd, and calculates the economic feasibility of the investment. There are several types of capital budgeting tools, and the one we are using in this example to calculate the maximum feasible economic bid price for a cow is called the net present value.

Table 1 shows an example of how this investment model may be used to calculate an expected price for a cow and calf pair based on projected prices and input costs. This example would represent the expected market price for a cow-calf pair under a "best case" scenario. In this example, it is assumed that steers will be weaned at 500 pounds, and heifers at 475 pounds, and it is expected that this cow will remain in the herd through the year 2017, weaning a calf every year for the next six years. Steer, heifer and cull cow prices are assumed to decline from current levels and expected to bottom in the year 2017. The costs associated with maintaining this cow is assumed to be \$550 per year. For the first year, these expenses are prorated out at a total of \$400. Expected cash flows are discounted at 5% to account for the time value of money and uncertainty.

Given these assumptions, a bid price of \$1195 per pair equates to a net present value near zero. This bid value leads to an internal rate of return of 5% in the payback period of seven years. These results indicate that a bid of \$1195 per pair would be the maximum feasible bid price given the assumptions outlined in the previous paragraph. At any price above the \$1195 bid price, the producer would be better off selling the pair. Also, if the maintenance cost in the initial year increases due to drought the producer would be better off selling the cow calf pair at any level above \$1195.

As of the week ending May 7, 2011 prices for cow-calf pairs of young to middle-aged cows with 100 to 300 pound calves selling in South Texas were ranging from \$900 to near \$1100 per pair. The high end of this range is slightly below the maximum feasible bid price calculated in this example. When compared with the calculated maximum feasible bid price of \$1195 per pair in our example, in "normal times" the producer would be better off keeping the pair. However, since we are in drought conditions it is very likely that the prorated operating cost for 2011 is too low. In our example, we only have \$95 per pair in current value to cover any supplemental costs due to the drought. If the producer believes that would not be sufficient to cover extra expenses due to the drought, it would be better to sell the pair now. Also, if the cow missed weaning a calf in any of the future periods, the model would generate a sell signal.

This is one example of how a producer who is faced with decisions related to culling cattle in response to drought can utilize decision support aids to evaluate these difficult management alternatives. It is important that the data specific to your operation be used to make sound decisions with these decision support aids. It is also important, that producers use these decision support aids to carryout sensitivity analysis by changing production, cost and output price assumptions to see what affect those changes have on the decision variables.

As you can see, the expected value of different types of cows in your herd depends on a lot of factors that are uncertain. Because of this uncertainty, many people totally ignore planning and consider the time spent on planning efforts to be wasted. Granted, it is highly unlikely that the future will unfold exactly as planned. However, it should be pointed out that cattle market conditions have never been stable over any extended period of time, so expecting that current conditions will prevail for the future is unreasonable. It should also be pointed out that the result of the planning process does not have to be an exact prediction to have value.

There are no hard and fast rules of thumb that will consistently provide the best culling strategy. Given the age composition of different herds along with the different physical resources for a particular ranch, the “cull half” and “cull to pay feed” may not be nearly aggressive enough for a younger herd or may be far too aggressive for an older herd. However, the use of these tools that we have discussed can provide benchmarks to calculate what might be best to do with the hand that you as a cattle producer have been dealt. This analysis should be carried out for your particular situation, because the “right” answer depends on the cost structure for your ranch and what you expect future prices to be.

Another case to examine with this tool might be whether to sell young bred cows today versus feeding through the drought (Table 2). Young bred cows weighing 1100-1200 pounds averaged \$1,050 per head in April at Oklahoma City. Using this price for the cow price generated a Net Present Value (NPV) of \$243.91. This NPV means that you have \$243.91 of “value” to “play with.” You can afford to feed that much money’s worth to try to get through the drought. At \$1.50 per day, you can afford to feed for about 163 days before it is better to sell the cow now. That also assumes that you get a calf each year for the next 6 years out of that cow

Most culling and buying back decisions can be examined with this simple tool. Any numbers highlighted in yellow (yellow on the computer, gray in this report) can be changed to evaluate new alternatives. These tools are available through your local County Extension office, or at <http://agfacts.tamu.edu/~lfalcone/newweb/droughtmgmt.htm>

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Table 1. Cow Bid Price Estimate Calculator Example.

Steer Weight	500	Cull Cow Sale Weight (Pounds/Head)	1,000	Lb.	Net Present Value (NPV)
Heifer Weight	475	Number of Calving Opportunities (Years)	7		
Pair Price	\$1,195	Discount Rate (%)	5.00	%	
					(\$0.09)

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	
Steers 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	\$60	
Gross Receipts (Calf Sales)	\$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

Financing Information

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

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 \$1195 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 2. Evaluating Selling Young Bred Cow Versus Feeding Through Drought.

Steer Weight	500	Cull Cow Sale Weight (Pounds/Head)	1,000	Lb.	Net Present Value (NPV)
Heifer Weight	475	Number of Calving Opportunities (Years)	7		
Pair Price	\$1,050	Discount Rate (%)	5.00	%	
					243.91

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	
Steers Price (\$/Cwt)	\$140	\$150	\$155	\$155	\$133	\$126	\$126	
Heifer Price (\$/Cwt)	\$134	\$144	\$149	\$149	\$127	\$120	\$120	
Cull Cow Price (\$/Cwt)	\$0	\$0	\$0	\$0	\$0	\$0	\$60	
Gross Receipts (Calf Sales)	\$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

Financing Information

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

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

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