

Profitability of Beef Cattle Best Management Practices in South Texas: Improving Profitability with Genetically Superior Sires and Higher Breeding Ratios

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Abstract

Bull selection and progeny performance are important considerations that can affect the number of calves weaned, calf weight and quality, and bottom-line profits. Selecting high quality bulls with superior genetics improves overall herd performance and profitability.

Introduction

“Best management practices,” such as selection of high quality and reliable performing bulls, are proven methods for improving overall herd performance and ranching profitability. However, many beef producers often use price as their primary criteria in selecting a breeding bull in an attempt to control costs, even if the bulls have proven genetics.

Often the difference in prices between two bulls is only a few more calves, a few more pounds of weaning weight per calf, or a few more cents per pound of weight when sold. Any of these are quite doable with a genetically superior bull. Bulls with higher calving ease can produce 3-4% more live calves worth \$3,000-\$4,000. The value of longevity of replacement heifers, adding 2-3 years of production per crossbred female, is worth an added \$3,000-\$6,000. The value of an above average bull compared to the average of a given breed is \$3,500-\$7,000 more (Marshall, 2012). Considering the genetics for growth and maternal effects, an above average bull could be worth \$5,000 or more than an average one. But, this doesn't mean that is what you should pay for it. That is what it is worth (Wheeler, 2000).

However, it is not enough to just use genetically superior bulls. They need to be bred to as many cows as possible to maximize the impact of their genetics in the cowherd and profitability. Increasing the breeding ratio (number of cows bred to a bull or bull-to-cow ratio) assists in offsetting the additional cost of the genetically superior herd sire. This study illustrates the financial implications of genetically superior bull selection and an increased breeding ratio on herd performance and profitability of South Texas ranching operations.

References

Marshall, Troy (2012). How Much is a Good Bull Worth: beef magazine.com/bbg/how-much-good-bull-worth (Accessed 2/26/16).

Wheeler, John (2000). What's a Good Bull Worth Really? www.noble.org/Ag/livestock/bulletin. March 2000 (Accessed 2/26/16).



Table 1: 2016 General Assumptions, South Texas Representative Ranch

Selected Parameter	Assumptions
Operator Off-Farm Income	\$50,000/year
Spouse Off-Farm Income	\$35,000/year
Family Living Expense	\$36,000/year
Native Pasture	1,800 acres
Improved Pasture (Bermuda)	200 acres
Ownership Tenure	100%
Royalty Income	Not Included
Hunting Income	\$10/acre
Herbicide/Acre (Native Pasture)	\$0.90
Herbicide/Acre (Bermuda)	\$12.00
Fertilizer/Acre (Bermuda only)	\$30.00
Number of Cows	200
Number of Bulls	6 or 8
Cow Herd Replacement	Bred cows
Vet, Medicine & Supplies	\$34.34/cow
Salt/Mineral blocks/Year	\$23.60/cow
Hay Fed/Cow/Year	1.5 tons
Protein Cubes Fed/Cow/Year	200 lbs.
Calving Rate	90%
Cow Culling Rate/Year	10%
Steer Weaning Weights	525 lbs.
Heifer Weaning Weights	475 lbs.
Steer Prices	\$1.88/lb. or \$1.98/lb.
Heifer Prices	\$1.55/lb. or \$1.65/lb.
Cull Cow Prices	\$.70/lb.
Cull Bull Prices	\$.90/lb.
Bred Cow Prices	\$1,600/head
Replacement Bull Prices/Head	\$3,000 or \$4,500
Hay Prices	\$100/ton
Bulk Range Cube Prices	\$.15/lb.
Pregnancy Testing	\$7.50/cow
BSE Testing	\$42.50/bull
Clostridial Vaccination	\$1.16/calf
Castration & Growth Implants	\$1.97/calf
Deworming Injection (Calf/Cow)	\$1.81/\$3.96
Reproductive Vaccines	\$3.12/cow
Extra Day Labor/Calf Practice	\$2/calf

Assumptions

A 2,000-acre ranch (200 cows, 8 bulls) with average market prices and inputs is assumed. Four scenarios were evaluated: 1) 8 genetically average bulls and 200 cows (1 bull to 25 cows, 1:25); 2) 6 genetically average bulls and 200 cows (1:35); 3) 8 genetically superior bulls and 200 cows (1:25); and 4) 6 genetically superior bulls and 200 cows (1:35).

The Financial And Risk Management (FARM) Assistance strategic planning model was used to illustrate the individual financial impacts of effective bull selection by South Texas ranchers. The base year for the 10-year analysis of the representative ranch is 2016 and projections are carried through 2025.

Beginning cattle prices used were from the Live Oak Livestock Commission Company auction report in Three Rivers, Texas, for January 18, 2016. It was assumed that calves from genetically superior bulls would bring a \$.10/lb. premium (on average) to calves from genetically average bulls due to their superior genetics increasing quality and weaning weights of their calves. The projections for commodity and livestock price trends follow projections provided by the Food and Agricultural Policy Research Institute (FAPRI, University of Missouri) with costs adjusted for inflation over the planning horizon.

Calving rates and death loss assumptions in the scenarios were based on research conducted by Texas A&M AgriLife Research and Extension and others. It was also assumed that reproductive management (pregnancy testing all cows, BSE testing for bulls and, vaccinations for reproductive and other diseases) and calf management (clostridial vaccinations, castration, growth implants, and deworming all cattle and calves as needed) were practiced by the producer. Production inputs, weaning weights, cost, and estimates for overhead charges were based on typical rates for the region. Assets, debts, machinery inventory, and scheduled equipment replacements for the projection period were the same in all management scenarios. It is assumed the ranch has only intermediate term debt.



Results

The methodology involved a 10-year financial simulation of returns of the ranch using stochastic cattle prices and calf weaning weights. The scenarios compare the financial performance of a cow-calf operation assuming the four bull selection management strategies.

Implications

Bull selection can have a major impact on herd performance and bottom-line profits. Bulls should be more than cow fresheners used to produce an average performing calf crop. Higher prices for better quality genetics will normally be returned from higher returns from calf sales. Through improved genetics, calves from genetically superior bulls will out-gain and out-weigh and have higher value per head than calves from genetically average quality bulls. The calves are higher quality (heavier, perhaps more uniform) and more desirable to the buyer who is willing to pay more. And, the replacement females from these genetically superior bulls will also improve the genetics of the cow herd. If the females are crossbred, besides heterosis for fertility, milk production and growth, they will exhibit greater productive longevity too. If management is good enough, these bulls can also be more widely used in the cowherd, breeding more cows than is common practice. While off-farm income, hunting, and other sources of income will continue to help sustain cattle operations, improving the quality of calves can significantly increase direct profits from actual cattle sales.

Actual results will likely vary by producer, bull selection, production region, and cattle markets. Cow-calf producers should continue to implement bull selection and other best management practices that improve the bottom-line and financial performance of their operation.

Table 2: 10-Year Average Financial Indicators for a South Texas Representative Ranch, 200 Cows

Scenario	10-Year Averages Per Year					Cumulative 10-Yr Cash Flow/Cow (\$1000)
	Total Cash Receipts (\$1000)	Total Cash Costs (\$1000)	Net Cash Farm Income (\$1000)	Net Cash Farm Income/Cow (\$1000)	Net Cash Farm Income/Calf (\$1000)	
1 8 Average Bulls	153.62	146.78	6.84	0.03420	0.03800	2.31895
2 6 Average Bulls	152.91	145.39	7.53	0.03750	0.04183	2.34730
3 8 Superior Bulls	162.63	149.95	12.68	0.06340	0.07044	2.52220
4 6 Superior Bulls	161.92	147.90	14.02	0.07010	0.07789	2.57585

Figure 1. Projected Variability in Net Cash Farm Income, 200 Cows

