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ECONOMIC IMPACT OF BEEF CATTLE BEST MANAGEMENT PRACTICES IN SOUTH TEXAS:

COW PREGNANCY TESTING, BSE TESTING, AND SHORTENED CALVING SEASON

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South Texas ranching operations may increase their profitability by adopting three management strategies—cow pregnancy testing, breeding soundness testing, and shortening calving seasons—according to research by the Texas AgriLife Extension Service.

The analysis found that, compared to a ranch that does not use these practices, South Texas ranchers may increase their net cash farm income by:

- $110.00 per cow per year for cow pregnancy testing
- $50.00 per cow per year for bull testing and culling
- $4.90 per cow per year by reducing the calving period from 120 to 90 days

The study used the Financial and Risk Management (FARM) Assistance strategic planning model to evaluate the financial effects of these three practices. It analyzed a simulated 2,000-acre ranch with 200 cows (one animal unit to 10-acre stocking rate) and eight bulls (one bull to 25 cows).

ASSUMPTIONS

The general assumptions and characteristics are given in Table 1. Specific and slightly different assumptions were used for each scenario.

Pregnancy testing

In the study, a typical ranch was assumed to have a 70 percent calving rate if it did not pregnancy-test cows. This rate is based on a study of eight Gulf Coast beef cattle herds in the 1980s by L. R. Sprott, a former Extension beef cattle specialist.

By adopting pregnancy testing and culling the open cows, the calving rate was assumed to increase over a 5-year period: from 70 percent in the first year to 81 percent in the next year, 89 percent the third year, 92 percent the fourth year, and 95 percent in the next 5 years.

Table 1. General Assumptions, 200-Cow South Texas Representative Ranch 2009

Selected Parameter	Assumptions
Operator Off-Farm Income	$24,000/year
Spouse Off-Farm Income	$35,000/year
Family Living Expense	$30,000/year
Ownership Tenure	100%
Royalty Income	Not included
Hunting Income	$7/acre
Herbicide Costs/Acre	$1.50
Herd Size	200 cows, 8 bulls
Cow Herd Replacement	Bred cows
Vet, Medicine, & Supplies	$25/cow
Salt/Mineral blocks/Year	$20/cow
Hay Fed/Cow/Year	1.5 tons
Protein Cubes Fed/Cow/Year	150 lb
Cow Culling Rate/Year	7.50%
Steer Weaning Weights	525 lb
Heifer Weaning Weights	475 lb
Steer Prices	$1.08/lb
Heifer Prices	$.98/lb
Cull Cow Prices	$.50/lb
Cull Bull Prices	$.62/lb
Bred Cow Prices	$1,100/head
Replacement Bull Prices	$2,300/head
Hay Prices	$135/ton
Range Cube Prices	$0.18/lb

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As pregnancy testing improved performance, the cow culling rate would drop: from 30 percent in the first year to 19 percent the second year, 11 percent the third year, 8 percent the fourth year, and 5 percent the next 5 years.

The average cost of pregnancy testing was assumed to be $6.20 per cow or $1,240 per year, which includes veterinarian ranch visit expenses and perhead charges.

Breeding soundness

In the evaluation of breeding soundness exams, the cow cull rate was 7.5 percent each year; bulls were culled every 4 years; and two infertile bulls were culled in year 1.

The adjusted calving rate was 76.5 percent per year. This rate was calculated from an eight-head bull battery servicing 25 cows each, with two bulls going sterile and the remaining bulls servicing 30 cows each. The fertile bulls would be able to cover five extra cows during the breeding season.

With the adoption of bull testing and culling infertile bulls, the calving rate increased after the first year by 76.5 percent and by 85 percent in the second through tenth years.

The average cost of bull testing was $57.63 per bull or $461 per year, which includes veterinarian ranch visit expenses and per-head charges.

Reduced calving season

The study compared 90-day and 120-day calving seasons. Pregnancy testing and bull testing were part of both scenarios, with the appropriate fees included.

For the 120-day season, the calving rate was assumed to be 95 percent per year, and the cow cull rate was 7.5 percent per year. It was assumed that 40 percent of the calves were born in the first month, 30 percent in the second month, 20 percent in the third month, and 10 percent in the fourth month.

In shortening the calving season to 90 days, it was assumed that 30 percent of the calf crop would be born in the third month. This increase was accomplished by supplementing the later-calving cows to improve their body condition scores so they would rebreed earlier in the season. They were given additional cubes and hay at a cost of $780 per year. Consequently, average calf weights increased by 5 pounds per calf (530 pounds for bull calves and 480 pounds for heifer calves) in years 2 through 10.

The base year for the 10-year analysis of the representative ranch was 2009; projections were carried through 2018. Commodity and livestock price trends follow the projections provided by the Food and Agricultural Policy Research Institute (University of Missouri), with the costs adjusted for inflation.

RESULTS

A comprehensive financial projection, including price and weaning weight risk, for the three scenarios is illustrated in Table 2 and Figures 1 and 2.

Pregnancy testing annually and culling open cows can significantly improve the profitability of a cow-calf operation, according to analysis findings. Without pregnancy testing, net cash farm income averages −$11,690 per year for the operation, or about −$60 per cow. With pregnancy testing, net cash farm income averages +$10,300, or about +$50 per cow per year. This change in net cash farm income is about $110 per cow per year. Every $1 expended in cow pregnancy testing brings in about $18 in return.

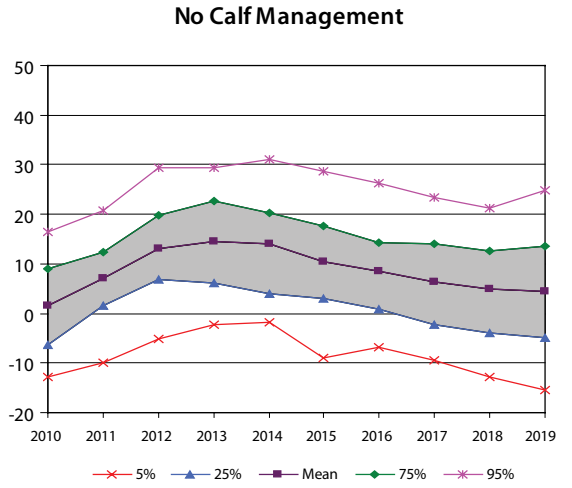
Figure 1 illustrates the risk in net cash farm income. Profit levels can range from −$33,000 to +$10,000 with no pregnancy testing, and from −$57,000 to $51,000 with pregnancy testing. The net cash farm income losses in the first, second, and third years reflect the heavy culling of open cows and buying replacement cows. These ranges also suggest that operations not testing for cow pregnancy are more likely to suffer operating losses over the projected period than those that do test.

In addition, liquidity or average cash reserves are enhanced by almost $80 per cow per year with pregnancy testing and cow culling (Table 2).

Breeding soundness testing every year can also increase profitability (Table 2, Fig. 1). With no annual bull testing, net cash farm income averages −$3,690 per year for the operation, or about −$20per cow. With bull testing and culling, net cash farm income averages +$5,500, or about +$30 per cow per year. This difference totals about $50 per cow per year. For every $1 spent in breeding soundness examination testing, about $22 is returned.

Figure 2 illustrates the risk to net cash farm income with and without bull testing. Profit levels can range from −$26,000 to +$19,000 without bull testing and −$26,000 to +$32,000 with bull testing.

Table 2: 10-Year Average Financial Indicators Per Cow					
Scenario	10-Year Averages Per Year				Cumulative 10-year Cash Flow/Cow ($1,000)
	Total Cash Receipts [1]($1,000)	Total Cash Costs ($1,000)	Net Cash Farm Income ($1,000)	Net Cash Farm Income/Cow ($1,000)	
No Pregnancy Testing	112.30	123.99	-11.69	-0.06	0.71
Pregnancy Testing	140.19	129.89	10.30	0.05	1.51
No Bull Testing	120.31	123.99	-3.69	-0.02	1.00
Bull Testing	129.96	124.45	5.50	0.03	1.32
120-Day Calving Season	143.01	125.69	17.32	0.09	1.74
90-Day Calving Season	144.07	125.77	18.30	0.09	1.77



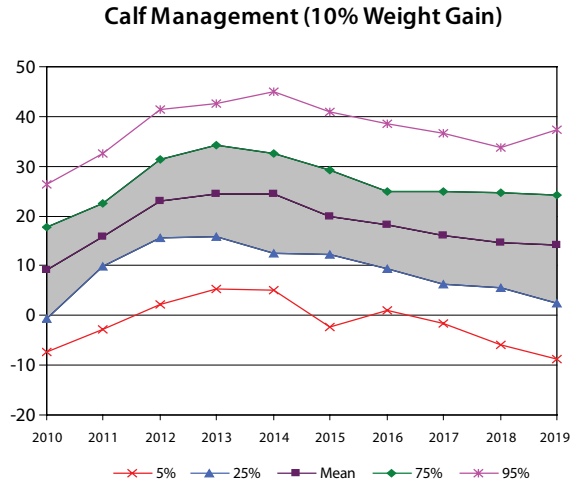
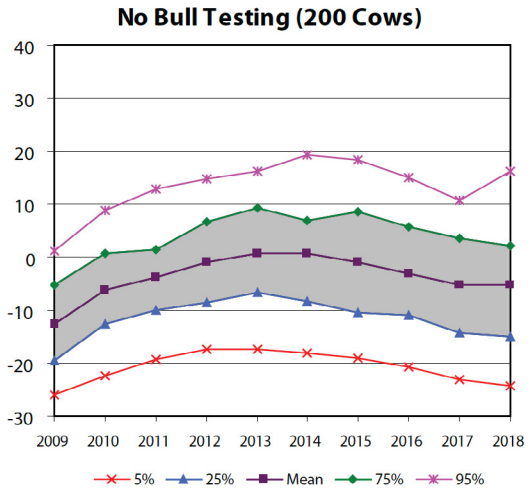


Figure 1. Projected Variability in Net Cash Farm Income



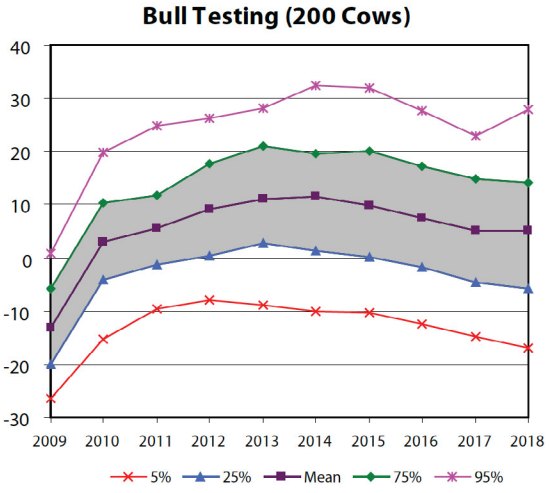


Figure 2. Projected Variability in Net Cash Farm Income

Net cash farm income increases significantly after the first year of bull testing. According to the study, ranches will have a higher risk of operating losses over the projected period with no bull testing than with testing.

Average cash reserves improve by about $32 per cow per year with breeding soundness testing (Table 2).

Reducing the calving period may offer some gains to the bottom line of a cow-calf operation (Table 2). In a 120-day calving period, net cash farm income averages $17,320 per year for the ranch, or about $86.60 per cow. In a 90-day calving period, the averages are $18,300 or about $91.50 per cow. The net change is about $4.90 per cow per year, or about $49 per cow over 10 years. The return amounts to almost $13 to $1 on the first-year additional feeding costs. On average, cash reserves improve only $3 per cow per year.

IMPLICATIONS

Although actual results may vary, a ranch's bottom line can improve after it implements cow pregnancy testing and culling open cows, breeding soundness testing and culling infertile bulls, and reducing the calving period from 120 to 90 days. Prudent managers will implement the practices that fit their operations and management styles.

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