FARM Assistance Focus

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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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Prudent managers should continually evaluate operations and implement new management strategies and changes to increase long-term profitability and equity growth.

Cow-calf operations in South Texas are continually confronted with weather and economic issues that impact bottom-line profits and long-term viability. Drought conditions limiting forage, swings in market prices, and ever increasing input costs directly impact net returns and financial condition. Off-farm income and wildlife management are often necessary to supplement ranching operations. In addition, prudent managers should continually evaluate operations and implement new management strategies and changes to increase long-term profitability and equity growth.

"Best management practices" is often used to describe a wide array of strategies to improve herd performance and ranching profitability. These may include changes to stocking rate, culling, supplemental feeding, breeds, herd mix, type of livestock enterprises, hay testing, cow pregnancy testing, bull breeding soundness examination (BSE) testing, and calving season. This study illustrates the financial implications of three management strategies—cow pregnancy testing, BSE testing, and shortened calving seasons—targeted toward optimizing the profitability of South Texas ranching operations.

Assumptions

The Financial And Risk Management (FARM) Assistance strategic planning model was used to evaluate and illustrate the individual financial impacts of various management strategies on a model South Texas Ranch. Three separate management practices were evaluated: 1) no cow pregnancy testing vs. annual pregnancy testing, 2) no BSE testing vs. annual BSE testing, and 3) a 90-day calving season shortened from a 120-day calving season. Although based on a common ranch, each of the three comparisons begins with the ranch in a slightly different baseline situation and evaluates the implementation of an alternative management practice.

The ranch is assumed to be 2,000 acres with 200 cows (1 animal unit to 10-acre stocking rate) and 8 bulls (1 bull to 25 cows). The general assumptions and characteristics are given in Table 1. Production inputs, yields, costs, and estimates for overhead charges were based on typical rates for the region. Hunting income was $7/acre in 2009. The assets, debts, machinery inventory, and scheduled equipment replacements for the projection period were the same in all three management practices. It is assumed the ranch has only intermediate term debt. Initial, local cattle prices were obtained from the Live Oak Livestock Commission Company auction report in Three Rivers, Texas, for May 4, 2009.

Specific and slightly different assumptions were made in each scenario. A typical ranch was assumed to have a 70% calving rate if it did not pregnancy test cows. This was based on an average of eight Gulf Coast beef cattle herds reported in unpublished research by L.R. Sprott, former Beef Cattle Extension Specialist, in the 1980s. With pregnancy testing and culling the open cows, the calving rate was assumed to increase over a five-year period (year 1=70%; year 2=81%; year 3=89%; year 4=92%; and years 5-10= 95%). Cow culling rate decreased over the five-year period as pregnancy testing improved performance (year 1=30%; year 2=19%; year 3=11%, year 4=8%; and years 5-10=5%). The average cost of pregnancy testing was assumed to be $6.20/cow or $1,240/year, which includes a vet ranch visit expense and per head charge.

In the BSE evaluation, the cow cull rate was 7.5%/year, bulls were culled every four years, 2 infertile bulls in year one, and the adjusted calving rate was 76.5%/year. This 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, a normal limit of their servicing capacity. It assumes the fertile bulls would be able to cover five extra cows during the breeding season. With bull testing and culling the infertile bulls, the calving rate increased after year one (year 1=76.5%; and years 2-10=85%). The average cost of bull testing was $57.63/bull or $461/year, which includes a vet ranch visit expense and per head charge.

To evaluate a reduced calving season, it was assumed that the normal calving season was 120 days, and pregnancy testing and bull testing was part of the operation with the appropriate fees included. The calving rate was 95%/year and the cow cull rate was 7.5%/year. It was assumed that 40% of the calves were born in the first month, 30% in the second month, 20% in the third month, and 10% in the fourth month. In shortening the calving season to 90 days, it was assumed that the 10% calf crop born in the fourth month would be born in the third month. This would be done by supplementing the later calving cows to improve body condition scores so they would rebreed earlier in the breeding season. Whereas the goal is to reduce the 10% late season and lighter weight calves, average calf weights were increased in years 2-10 by five pounds per calf (530 lb. bull calves and 480 lb. heifer calves). To facilitate late calving

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

Selected Parameter	Assumptions
Operator Off-Farm Income	$24,000/yr
Spouse Off-Farm Income	$35,000/yr
Family Living Expense	$30,000/yr
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/Yr	$20/cow
Hay Fed/Cow/Yr	1.5 tons
Protein Cubes Fed/Cow/Yr	150 lbs.
Cow Culling Rate/Yr	7.50%
Steer Weaning Weights	525 lbs.
Heifer Weaning Weights	475 lbs.
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	$.18/lb.

Table 2: 10-Year Average Financial Indicators Per Cow for a South Texas Representative Ranch (200 Cows)

Scenario	10-Year Averages				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)	
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

cows in year one to breed sooner, $780/year additional cubes and hay were fed in year one.

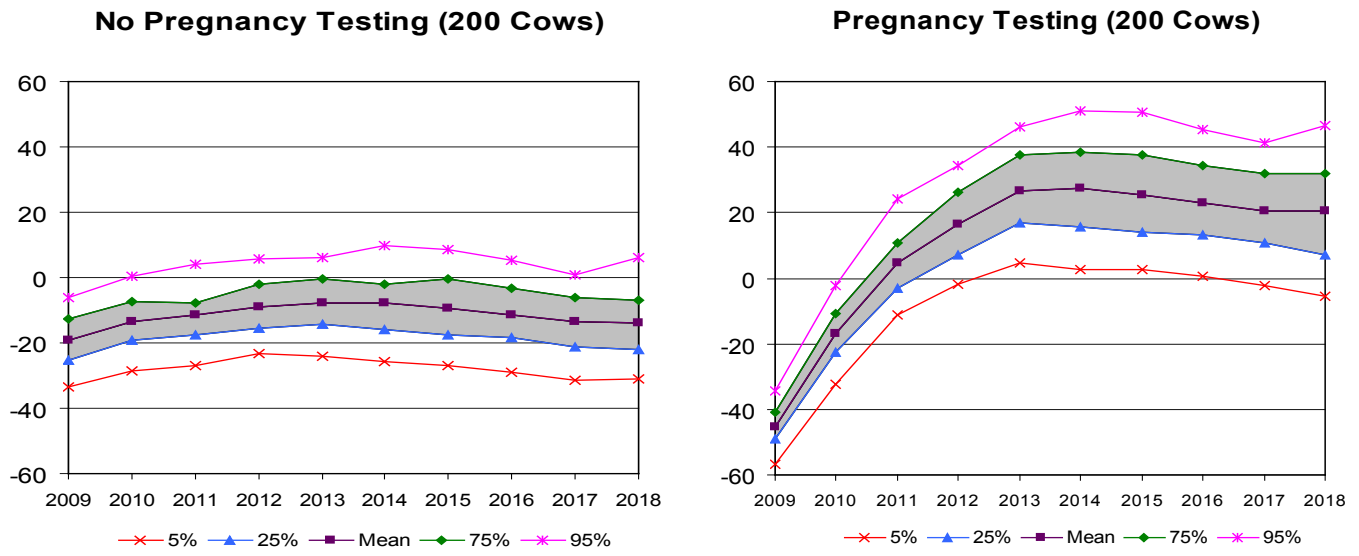
The base year for the 10-year analysis of the representative ranch is 2009 and projections are carried through 2018. Commodity and livestock price trends follow projections provided by the Food and Agricultural Policy Research Institute (FAPRI, University of Missouri) with costs adjusted for inflation over the planning horizon. Representative measures, including profitability and liquidity were chosen to assess the financial implications of each scenario. Profitability measures the extent to which a farm or ranch generates income from the use of its resources. Net cash farm income (NCFI) is one measure of profitability. Liquidity measures the ability of a farm or ranch to meet its short-term financial obligations without disrupting the normal operations of the business. The liquidity of the operation may be measured by the ending cash balance. Each measure provides information with respect to the projected variability in the ranch's financial position and performance. When taken as a whole, the analysis provides insight into the risk and return expectations of the ranch throughout the planning horizon under each management practice.

Results

A comprehensive financial projection, including price and weaning weight risk, for the three separate cow-calf scenarios is illustrated in Table 2 and Figures 1 and 2. Table 2 presents the average outcomes for selected financial projections, while the graphical presentations illustrate the range of possibilities for the selected variable.

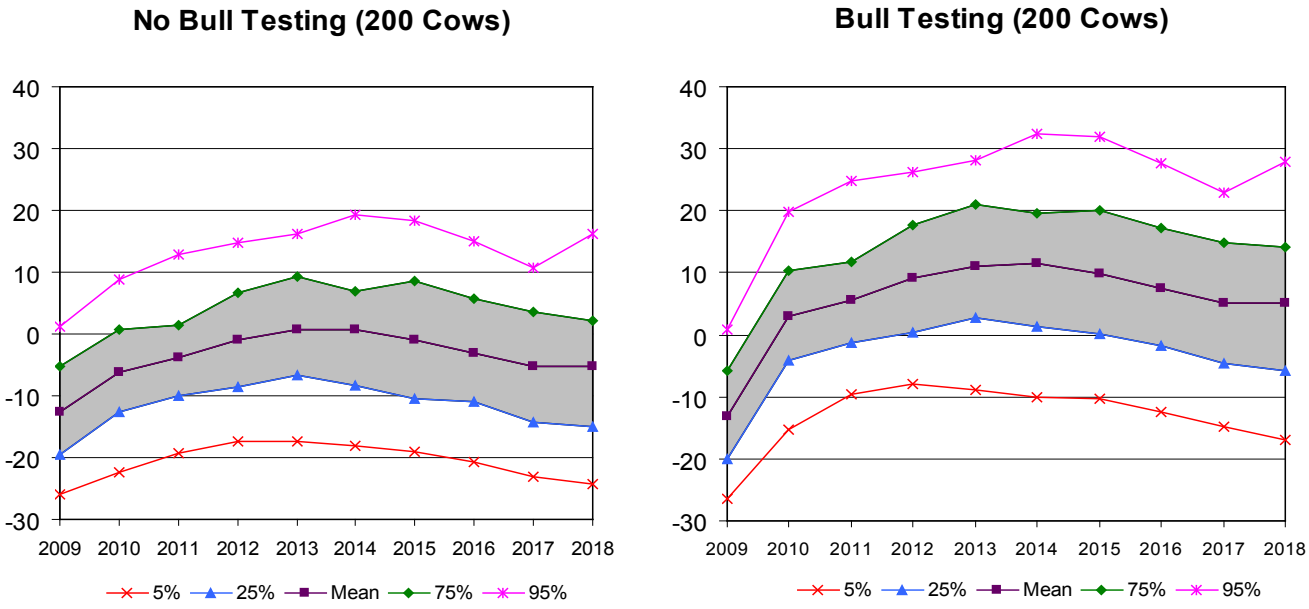
Pregnancy testing annually and culling open cows offers the potential for significantly impacting profitability and financial performance of a cow-calf operation (Table 2 and Figure 1). With no pregnancy testing, net cash farm income (NCFI) averages -$11,690 per year for the operation or approximately -$60/cow. With pregnancy testing, NCFI averages $10,300 or about $50/cow per year. Compared to no pregnancy testing and cow culling, this is a net change in NCFI of about $110/cow per year. For every $1 expended in cow pregnancy testing, there is approximately an $18 return. Figure 1 illustrates the risk in NCFI. The range indicates profit levels from approximately -$33,000 to $10,000 is possible with no pregnancy testing and -$57,000 to $51,000 with pregnancy testing. The NCFI losses in years 1-3 reflect the heavy culling of open cows and buying replacement cows. These ranges also suggest that there is more risk of operating losses over the projected period with no pregnancy testing than with testing.

Figure 1. Projected Variability in Net Cash Farm Income



Although actual results may vary by producer, cow pregnancy testing and culling open cows, BSE testing and culling infertile bulls, and reducing the calving period may offer opportunities to improve a ranch's bottom line.

Figure 2. Projected Variability in Net Cash Farm Income



Liquidity or average cash reserves are also enhanced by almost $80/cow per year with pregnancy testing and cow culling (Table 2). It is worth noting that off-farm income contributes somewhat to the cash flow of the ranching business; however, this effect is present in both scenarios.

BSE testing herd sires every year can also increase profitability (Table 2 and Figure 2). Assuming no annual bull testing, NCFI averages -$3,690 per year for the whole operation or about -$20/cow. With bull testing and culling, NCFI averages $5,500 or about $30/cow per year. Compared to no bull testing, this is a net change of about $50/cow per year. For every $1 spent in BSE testing, there is about a $22 return. Figure 2 illustrates the risk in NCFI with and without bull testing. The range indicates profit levels from approximately -$26,000 to $19,000 with no bull testing and -$26,000 to $32,000 with bull testing is possible. NCFI increases significantly after year 1 when bull testing is implemented. These ranges also suggest that there is more risk of operating losses over the projected period with no bull testing than with testing. Average cash reserves improve about $32/cow per year with BSE 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, NCFI averages $17,320 per year for the ranch or about $86.60/cow. In a 90-day calving period, NCFI averages $18,300 or about $91.50/cow. This is a net change of approximately $4.90/cow per year or about $49/cow over 10 years. It amounts to almost a $13 to $1 return on the first year additional feeding costs. On average, cash reserves improve only $3/cow per year.

Implications

The financial well-being of the typical South Texas cow-calf operation is often supported by off-farm employment, hunting and other income sources. Implementing best management practices offer a cow-calf-producer the potential to improve herd performance and profitability. Although actual results may vary by producer, cow pregnancy testing and culling open cows, BSE testing and culling infertile bulls, and reducing the calving period may offer opportunities to improve a ranch's bottom line. A prudent manager will study and implement practices that fit his or her management style and operation.

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