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Profitability of Beef Cattle Best Management Practices in South Texas: Reproductive Management Practices

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Successful managers will implement cost-effective ways to improve their overall operations and reduce financial risk exposure to today's higher investment costs.

Cow-calf producers are beginning to expand breeding herds in response to rising cattle prices and improved forage conditions across most of Texas and the U.S. The demand and prices for feeder calves and herd replacements are driving the increased optimism. Reproductive management practices such as pregnancy testing, bull breeding soundness exams (BSE) and vaccinations for reproductive diseases are important tools that can affect the number of live calves born and weaned and bottom-line profits. Successful managers will implement cost-effective ways to improve their overall operations and reduce financial risk exposure to today's higher investment costs.

“Best management practices” such as pregnancy testing, bull BSE and vaccinations for reproductive diseases are proven strategies to improve herd performance and ranching profitability. However, many beef producers do not implement these practices. According to the 2007-08 National Animal Health Monitoring Report for Beef conducted by USDA, only 18% of US beef producers utilize pregnancy testing in their cows, only 19.5% conduct breeding soundness exams on their bulls, and only 39.6% vaccinate for any reproductive diseases (USDA 2009 & 2010). The most common reasons for producers not using these practices are lack of knowledge or skill, facilities, time or cost. This study illustrates the financial implications of using selected reproductive management practices to optimize the profitability of South Texas ranching operations.

Assumptions

The Financial And Risk Management (FARM) Assistance strategic planning model was used to illustrate the individual financial impacts of using vet management practices by South Texas ranchers. Five scenarios were evaluated: 1) Not using any reproductive management practices (no pregnancy testing, no BSE, and no vaccinations for reproductive diseases); 2) Pregnancy testing all cows; 3) BSE testing all bulls; 4) Vaccinating all cows for reproductive diseases; and 5) Using all three reproductive management practices (pregnancy testing cows, BSE testing bulls, and vaccinations for reproductive diseases).

The 2,000-acre ranch in this model consists of 1,800 acres of native pasture and 200 acres of established Coastal Bermuda used for grazing only. Under normal stocking conditions, the cow herd includes 200 cows (1 animal unit to 10-acre stocking rate) and 8 bulls (1 bull to 25 cows). The general assumptions are given in Table 1. Production inputs, yields, cost, and estimates for overhead charges were based on typical rates for the region. In 2015, the income from hunting was \$10/acre. The 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. Cattle prices used were from the Live Oak Livestock Commission Company auction report in Three Rivers, Texas, for January 26, 2015.

Calving rates and death loss assumptions in the scenarios were based on research conducted by Texas A&M AgriLife Research and Extension Service as well as those typical for the region (Table2.).

The base year for the 10-year analysis of the representative ranch is 2015 and projections are carried through 2024. 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. Profitability and liquidity were measures 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) was used to measure profitability. It includes the purchase and sale of breeding livestock, but does not include non-

Table 1: 2015 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
Herd Size	200 Cows, 8 Bulls
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	\$2.70/lb.
Heifer Prices	\$2.50/lb.
Cull Cow Prices	\$1.10/lb.
Cull Bull Prices	\$1.20/lb.
Bred Cow Prices	\$1,850/head
Replacement Bull Prices	\$4,500/head
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

Table 2: Specific Assumptions for a South Texas Representative Ranch (200 Cows)

Scenario	Pregnancy Testing (\$/Cow)	Bull Soundness Exam (\$/Bull)	Reproductive Vaccinations (\$/Cow)	Calf Death Loss	Specific Calving Rates		
					Year 1	Year 2	Year 3-10
1-No Reproductive Practices	n/a	n/a	n/a	5%	70%	70%	70%
2-Pregnancy Testing	7.50	n/a	n/a	1%	85%	90%	95%
3-Bull Soundness Exam	n/a	42.50	n/a	1%	85%	90%	90%
4-Reproductive Vaccinations	n/a	n/a	3.12	1%	80%	85%	85%
5-All Reproductive Practices	7.50	42.50	3.12	1%	90%	95%	95%

cash items such as depreciation. 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 net of taxes. Both measures provide information with respect to the projected variability in the ranch's financial position and performance expectations of the ranch throughout the 10-year planning horizon under each reproductive management practice.

Results

Financial projections for each reproductive management practice scenario are given in Table 3. These results represent the average outcomes for net cash farm income, cash flow and other financial projections for 2015-2024. Figure 1 illustrates the range of possibilities comparing no reproductive management practices to Scenario 5, all practices. It should be noted that off-farm income and hunting contributes somewhat to the cash flow of the ranching business in all scenarios.

All four reproductive management practice scenarios evaluated offer the potential to significantly increase profitability of an operation (Table 3 and Figure 1). With no reproductive management practices (Scenario 1), the average net cash farm income (NFCI) is \$46,650/year or \$233/cow/year and \$348/calf/year. The operation begins the first year of each scenario with a total cash balance of \$10,000, and if profitable, accumulates cash over the 10-year period. Average cash reserves, at the end of the 10-year projections for Scenario 1 is \$3,761/cow.

Pregnancy testing cows (Scenario 2) offers a significant potential for improving profitability and financial performance of a cow-calf operation (Table 2). NCFI averages \$101,110/year over the 10-year projection, 116.8% more than Scenario 1, the no reproductive management practices scenario. The returns equate to \$506/cow, \$273/cow more than Scenario 1. Returns per calf were \$532/calf, an increase of \$184/calf. These increases were due to an increased calving rate especially after the first few years of implementation. This reproductive management practice has its largest effect in herds with the lowest pregnancy rates as it allows beef producers to identify cows with poor reproductive performance and replace them. Average cash reserves at the end of the 10-year period increase to \$5,372/cow on average.

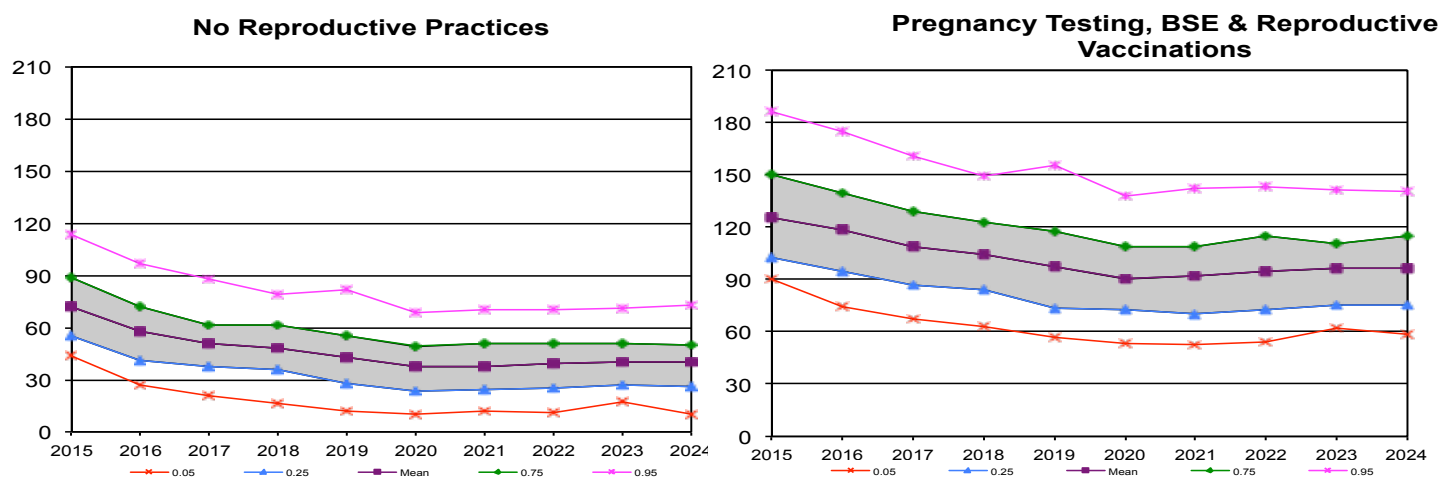
Bull breeding soundness exams (Scenario 3) also increased profitability based on the case study assumptions (Table 2). NCFI averages \$94,410/year, 102.4% more than Scenario 1. This amounts to a \$239/cow and \$177/calf increase over no reproductive management

Table 3: 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-No Reproductive Practices	196.75	150.10	46.65	0.233	0.348	3.761
2-Pregnancy Testing	256.05	154.94	101.11	0.506	0.532	5.372
3-Bull Soundness Exam	247.53	153.12	94.41	0.472	0.525	5.182
4-Reproductive Vaccinations	236.19	153.81	82.38	0.412	0.485	4.834
5-All Reproductive Practices	258.52	155.98	102.54	0.513	0.540	5.418

Implementing cost-effective reproductive management practices such as pregnancy testing, BSE, and vaccinations for reproductive diseases can also improve calving rates, reduce calf death losses, and improve profitability, alleviating some of the risk exposure to higher capital investment and rising operating costs.

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



practices (Scenario 1). For the 81.5% of US beef producers not using this reproductive management practice, this would be a significant financial increase even at half the expected increase. Average ending cash reserves improve by \$1,421/cow.

Vaccinations for reproductive diseases (Scenario 4) also offer potential gains to the bottom-line of a cow-calf operation. NCFI averages \$82,380, 76.6 % more than Scenario 1 (Table 2). This is a net increase of \$179/cow and \$137/calf over Scenario 1. Ending cash reserves increased by \$1,073/cow. Not all producers need to have the same vaccination program but some reproductive diseases are common across the US. And as this example shows, the 60.4% of beef producers who don't vaccinate for any reproductive diseases are missing out on a significant amount of income.

All reproductive management practices (Scenario 5) combines the benefits of cow pregnancy testing, BSE of bulls, and vaccinations for reproductive diseases. NCFI averages \$102,540, and represents \$513/cow and \$540/calf per year (Table 2 and Figure 1). This reflects a 119.8% or \$55,890 (\$280/cow and \$192/calf) increase over Scenario 1 (no reproductive management practices). Ending cash reserves are 44.1% higher than the no reproductive management practices scenario. With only 1 out of 6 (pregnancy testing), 1 out of 5 (bull BSE), and 1 out of 2.5 (vaccinations) implementing reproductive management practices, producers could improve their overall profitability.

Implications

High market prices increase the potential net profits and risk exposure in cattle operations. Off-farm income, hunting, and other sources of income help mitigate the higher level of financial risk. However, implementing cost-effective reproductive management practices such as pregnancy testing, BSE, and vaccinations for reproductive diseases can also improve calving rates, reduce calf death losses, and improve profitability, alleviating some of the risk exposure to higher capital investment and rising operating costs. Earlier it was stated that the most common reasons for producers not using these practices are lack of knowledge or skill, facilities, time or cost. These results show these practices are very profitable and could pay for facilities, training, or to pay for veterinarian to conduct them.

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

References

USDA. 2009. Beef 2007-08, Part II: Reference of Beef Cow-calf Management Practices in the United States, 2007-08. USDA:APHIS:VS, CEAH. Fort Collins, CO.#N512.0209

USDA. 2010. Beef 2007-08, Part IV: Reference of Beef Cow-calf Management Practices in the United States, 2007-08. USDA:APHIS:VS, CEAH. Fort Collins, CO.#523.0210