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**Economic Impact of Beef Cattle  
Best Management Practices  
in South Texas:**

**Calf Management**



**Cody Ringer**  
Extension  
Assistant

**Mac Young**  
Extension Program  
Specialist-Risk  
Management

**Joe Paschal**  
Professor and  
Extension  
Livestock  
Specialist

**Steven Klose**  
Associate Professor  
and Extension  
Economist

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Department of Agricultural Economics  
Texas AgriLife Extension Service  
Texas A&M University System

*farmassistance.tamu.edu*

## *South Texas cow-calf operations may increase their profits significantly by adopting four selected calf-management practices.*

South Texas cow-calf operations may increase their profits significantly by adopting four selected calf-management practices, according to an analysis by the Texas AgriLife Extension Service.

The case study found that, compared to ranches that do not use these practices, South Texas ranches may increase their net cash farm income over a 10-year period by:

- 63.7 percent if they administer clostridial vaccinations against blackleg to all calves
- 31.8 percent if they castrate bull calves and implant all calves
- 19.9 percent if they deworm all cattle and calves
- 119.9 percent if they implement all four practices—clostridial vaccinations, castrating, implanting, and deworming

The analysis was based on a 2,000-acre ranch consisting of 1,800 acres of native pasture and 200 acres of established Coastal Bermudagrass used for grazing only. The herd included 200 cows (1 animal unit to 10-acre stocking rate) and 8 bulls (1 bull to 25 cows).

Findings for the five scenarios evaluated were produced using the Financial and Risk Management (FARM) Assistance strategic planning model. For more information on the Financial and Risk Management (FARM) Assistance strategic model, go to the FARM Assistance website at <http://farmassistance.tamu.edu/>. Although the actual results may vary by producers, management practices, and cattle markets, this example shows the possible bottom-line impacts for a reasonable set of assumptions.

### **Assumptions**

The general assumptions are given in Table 1. Typical rates for the region were used for production inputs, yields, cost, and estimates for overhead charges. In 2010, the income from hunting was \$7

per acre. The assets, debts, machinery inventory, and scheduled equipment replacements for the projection period were the same in all management scenarios. It was assumed that the ranch had only intermediate-term debt.

Cattle prices from the Live Oak Livestock Commission Company auction report in Three Rivers, Texas, for May 30, 2010 were used in the evaluations. In Scenarios 3, 4, and 5, a market price slide of \$0.02 for each 25 pounds of weight gain was assumed to reflect market changes.

In each of the scenarios, the operation of the representative ranch begins the first year with a cash balance of \$10,000, and, if profitable, accumulates cash over the 10-year period. The base year for the 10-year analysis is 2010; projections are carried through 2019. Off-farm income and hunting contribute to the cash flow of the ranching business. The ranch pregnancy tests cows, does breeding soundness examinations on bulls, and has an 85 percent calving rate.

Weight gain and death loss assumptions are based on research conducted by Texas AgriLife Research and the Texas AgriLife Extension Service. 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.

### **Scenario 1:**

#### **No clostridial vaccinations, implants, castration, growth implants, or deworming**

The ranch does not use blackleg vaccinations, castration, or implants, and does not deworm calves. With no calf management, this scenario has an assumed 6 percent death loss.

### **Results:**

- With no selected calf management practices, the average net cash farm income is \$8,480 a year or \$42 per cow per year and \$50 per calf per year.

*Average cash reserves at the end of the 10-year period increased \$188 per cow and \$220 per calf (Scenario 2).*

Table 1: 2010 General Assumptions, South Texas Representative Ranch

Selected Parameter	Assumptions
Operator Off-Farm Income	\$24,000/year
Spouse Off-Farm Income	\$35,000/year
Family Living Expenses	\$30,000/year
Native Pasture	1,800 acres
Improved Pasture (Bermuda)	200 acres
Ownership Tenure	100%
Royalty Income	Not Included
Hunting Income	\$7/acre
Herbicide/Acre (Bermuda only)	\$7.50
Fertilizer/Acre (Bermuda only)	\$13.00
Herd Size	200 cows, 8 bulls
Cow Herd Replacement	Bred cows
Vet, Medicine & Supplies	\$25/cow
Salt/Mineral blocks/Year	\$30/cow
Hay Fed /Cow/Year	1.5 tons
Protein Cubes Fed/Cow/Year	150 lbs.
Calving Rate	85%
Cow Culling Rate/Year	7.50%
Steer Weaning Weights	525 lbs.
Heifer Weaning Weights	475 lbs.
Steer Prices	\$1.12/lb.
Heifer Prices	\$1.05/lb.
Cull Cow Prices	\$.54/lb
Cull Bull Prices	\$.62/lb.
Bred Cow Prices	\$1,100/head
Replacement Bull Prices	\$2,300/head
Hay Prices	\$100/ton
Range Cube Prices	\$.15/lb.
Pregnancy Testing	\$6.50/cow
Bull Testing	\$57.63/bull
Clostridial Vaccination	\$.84/calf
Growth Implants	\$1.74/calf
Deworming Pour-On	\$3.39/cow
Extra Day Labor/Practice	\$1/calf

- Average cash reserve at the end of the 10-year projections is \$1,517 per cow and \$1,785 per calf.

### Scenario 2:

#### Clostridial vaccinations administered to all calves

Calves receive a clostridial vaccination and a booster once a season. The two vaccinations cost 84 cents per calf or \$144 per year for all calves. Calf prices and weights are the same as in Scenario 1. A 1 percent death loss is assumed because of the use of the 7-way vaccination that prevents disease. A \$2 per calf charge or \$340 per year for all calves is added for extra day labor.

#### Results:

- Clostridial vaccination offers the greatest potential for improving the profitability and financial performance of a cow-calf operation, assuming the death loss reduction from a high of 6 percent to a low of 1 percent.
- Net cash farm income averages \$13,880 per year over the 10-year projection, 63.7 percent more than with the no-vaccination scenario.
- Returns per cow were \$69, an increase of \$27 per cow more than the no vaccination scenario.
- Returns per calf were \$82, an increase of \$32 per calf due to a reduction in death loss.
- Average cash reserves at the end of the 10-year period increased \$188 per cow and \$220 per calf.

### Scenario 3:

#### Bull calves castrated and all calves implanted

All bull calves are castrated and growth-promoting implants used in all calves. Implant cost is estimated to be \$1.74 per calf. The cost of castrating and implanting is \$2.11 per calf. Research by the Texas AgriLife Extension Service shows that implants would increase weight gain by 5 percent; steers weigh 550 pounds and heifers weigh 500 pounds at weaning as a result of this practice. The heavier-weight

*The financial implications of each scenario were assessed using representative measures, including profitability and liquidity.*

cattle will result in a market price slide of \$0.02 per hundredweight for each 25 pounds of weight gain for calves. A \$1.50 per calf charge or \$255 per year for extra day labor is added to work the calves.

**Results:**

- Castration and growth implants increased profitability. Net cash farm income averaged \$11,180 per year or 31.8 percent more than Scenario 1. This amounts to a \$14 per cow and \$16 per calf increase over doing nothing.
- Average ending cash reserves improved by \$93 per cow and \$109 per calf.
- A market price slide of \$0.02 per hundredweight was assumed since the calves were an average of 25 pounds heavier, reducing potential gains in income and cash reserves.

**Scenario 4:**

**All cattle and calves dewormed**

A pour-on application for deworming and horn fly protection is used for the entire herd. The cows and bulls are dewormed twice a year and the calves once. The estimated cost of deworming all cattle and calves is \$3.39 per cow per year. A charge of \$0.85 per cow or \$170 per year labor is added for the second round of deworming. Based on a study

at California Polytechnic State University, a 5 percent weight gain for calves is assumed; steers weighed 550 pounds and heifers weighed 500 pounds at weaning. A market price slide of \$0.02 per hundredweight is assumed for each 25 pounds of weight gain on calves at sale.

**Results:**

- Deworming offers gains to the bottom line of a cow-calf operation. Net cash farm income averages \$10,170 or 19.9 percent more than Scenario 1 (Table 2). This is a net increase of \$9 per cow and \$10 per calf over Scenario 1.
- Ending cash reserves increased by \$58 per cow and \$68 per calf.
- Gains in net cash farm income and cash reserves were again tempered by the market price slide of \$0.02 per hundredweight.

**Scenario 5:**

**All selected management practices used—clostridial vaccinations, castrating and implanting, and deworming**

Clostridial vaccinations, castration and implants, and deworming are used. Average calf weights will increase 10 percent; steers weigh 525 to 575 pounds and heifers weigh 475 to 525 pounds.

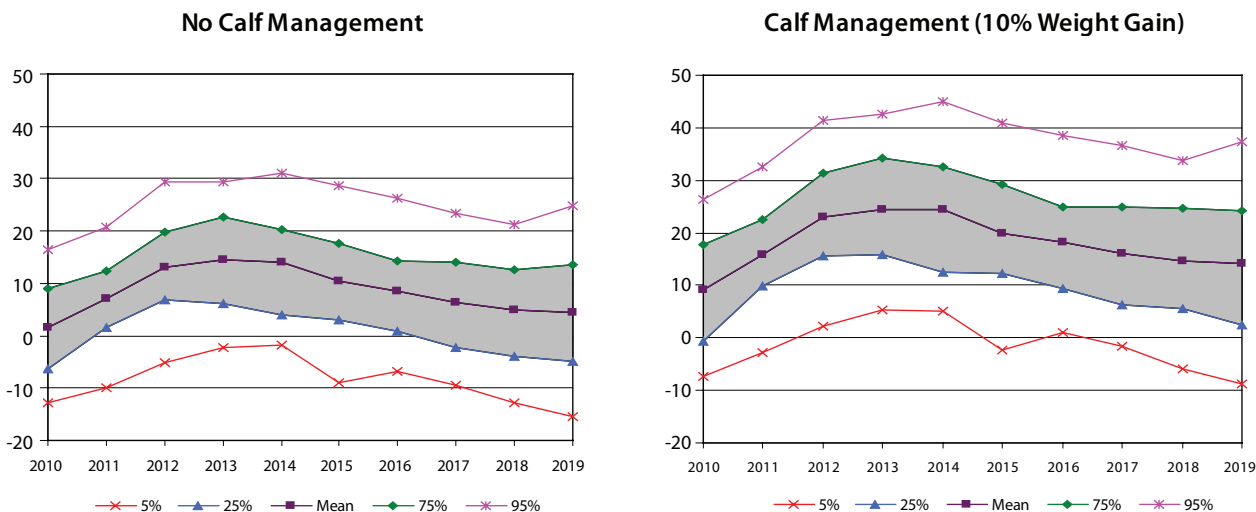
Table 2: 10-Year Average Financial Indicators for a South Texas Representative Ranch (200 Cows)

Scenario	10-Year Averages					10-Yr Ending Cash Balance/Cow (\$1000)	10-Yr Ending Cash Balance/Calf (\$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 Calf Management	129.60	121.12	8.48	0.042	0.050	1.517	1.785
2-Clostridial Vaccinations	135.49	121.60	13.88	0.069	0.082	1.705	2.005
3-Castration & Implants	132.98	121.80	11.18	0.056	0.066	1.610	1.894
4-Deworming	132.99	122.82	10.17	0.051	0.060	1.575	1.853
5-All Calf Management	141.98	124.01	17.97	0.090	0.106	1.843	2.168



*When taken as a whole, the analysis provides insight into the risks and return expectations of the ranch under each management practice.*

Figure 1: Projected Variability in Net Cash Farm Income for No Calf Management vs. Calf Management and 10% Weight Gain



The extra labor charge for the combined three practices is \$4.68 per cow or \$935 total per year. The \$0.02 per hundredweight price slide for each 25-pound weight gain is also applicable.

### Results:

- All-calf management combines the benefits of clostridial vaccinations, castration and implants, and deworming.
- Net cash farm income averages \$17,970 and represents \$90 per cow and \$106 per calf per year (Table 2 and Fig. 1). This reflects a 111.9 percent or \$9,490 increase (\$47 per cow and \$56 per calf) over Scenario 1 with no calf management practices.
- Ending cash reserves increase by 21.5 percent.

### Implications

The financial implications of each scenario were assessed using representative measures, including profitability and liquidity. Profitability gauges the extent that a farm or ranch generates income from its resources. One indicator of profitability is net cash farm income. Liquidity measures the ability of a farm or ranch to meet its short-term financial

obligations without disrupting normal operations. The ending cash balance, which is net of taxes, may show the liquidity of the operation. Each measure provides information on the projected variability in the ranch's financial position and performance.

When taken as a whole, the analysis provides insight into the risks and return expectations of the ranch under each management practice. Comprehensive financial projections, including price and weaning weight risks, are illustrated in Table 2 and Figure 1. Table 2 presents the average outcomes for selected financial projection, while the graphic illustrates the range of possibilities for the selected variable. The actual slide in calf prices from extra weight gain of 5 to 10 percent may vary according to existing market conditions and will directly impact overall profitability.

### Resources

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