

Identification of Risk Vulnerability in Cow-calf Operations Final Report

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**Project Number RME-D1D02334
Southern Region Risk Management Education Center**

This project utilized the Beef Cow-calf Standardized Performance Analysis (SPA) program to identify strengths and vulnerabilities of cow-calf operations during a two year period. The SPA program is a production and financial performance analysis system and facilitates the comparison of an operations performance between years, producers, production regions, and production systems (Bevers and McCorkle). The analysis is normally completed the following calendar year after the calves have been weaned. This assures that all production and financial data needed has been completed.

The project involved cow-calf operators completing the analysis twice with the assistance of the project manager. Eleven ranches were analyzed for two years. The first analysis was completed in the spring and summer of 2007 for calves weaned in the 2006 year, i.e., the 2006 year was analyzed. These results were then compared to the means and standard deviations of a SPA database (benchmark) to determine the operations strengths and vulnerabilities. Results included ten production performances, 25 financial performances, and eleven miscellaneous performances. An operation's strengths and vulnerabilities were identified when their results were 1.5 standard deviations away from the mean of the benchmark database means.

Following the first years completion, a risk management plan was completed for each operation that identified specifically where their vulnerabilities were. The report included possible means of mitigating the risk.

In the spring and summer of 2008, the second year analyses were completed. Results were compared to the previous year's analysis results and also to the benchmark means and standard deviations. A final risk management report was completed which then included a trend analysis.

Table 1 presents the 2006 production strengths and vulnerabilities of the eleven herds compared to the benchmark mean and standard deviation. In this case, the benchmark mean and standard deviation were based upon 97 herds making up 51,888 breeding females that had completed the SPA analysis since 2002. Of the ten production performances, there were five strengths and three weakness found across the eleven ranches. The most common strength was pounds weaned per acre. The benchmark mean was 48.1 pounds per acre while

the standard deviation was 35.1. This suggests large variability across the benchmark data and in fact the benchmark data includes ranches that utilize native pasture (where pounds per acre would be very low) to ranches that utilize predominantly improved pastures (where pounds per acre would be very high). Vulnerabilities were limited to three; however, two of these were identified on the same ranch (ranch 10). Overall, the results are not surprising in that the typical focus of the operators and resource experts tend to be on the production side. In the end, most operations' production levels are alike unless an abnormal one-time situation occurs such as a disease outbreak or a non-performing bull battery.

Table 2 outlines the revenue and expenses per breeding female and strengths and vulnerabilities of the eleven herds. The benchmark Gross Revenue mean was \$515.24 per breeding female while the standard deviation was 132.6. Gross revenue includes sales of weaned calves (or values assigned to retained calves), value of retained replacement heifers, gains and/or losses on the sale of culled breeding stock, and finally any miscellaneous income generated from the cow-calf resources. Again, ranchers are typically characterized as price takers and if their production level is somewhat common as suggested by the Table 1 results, then their gross revenue would have to be alike as well.

As pointed out by most media and experts, most ranchers need to focus on their cost structure. Table 2 also includes 23 expense items and one total cost. Each of these expenses is expressed on a breeding cow basis. The benchmark mean was \$519.31 per breeding female while the standard deviation was 137.0. Comparing the gross revenue to the total cost, the benchmark net income was a negative \$4.07 per breeding female.

Of the 23 expense types, 24 ranch vulnerabilities were found. The most common vulnerability across the ranches was professional fees where four ranch's professional fees were greater than 1.5 standard deviations away from the benchmark mean. Professional fees represent a small percentage of the total costs (1.2%) and include accounting fees, legal fees, etc.

The most vulnerabilities found on the eleven ranches were four. Ranch 2 was vulnerable for Building and Improvement Depreciation, Freight, Utilities, and Professional Fees. Ranch 3 was vulnerable for their Purchased Feed expense, their repair and maintenances cost, utilities, and their veterinary and breeding expenses. Three ranches were found to be vulnerable with regard to their total costs.

Table 3 presents summary data as well as some miscellaneous data. Breakeven price per cwt of weaned calves provides a common figure where production and costs are compared. The benchmark mean is \$111.41 per cwt while the standard deviation is 31.2. While the standard deviation is high, no ranches were found to be vulnerable. However, given the standard deviation, some of the

ranches would find it difficult to be profitable if they were even one-half standard deviation from the benchmark mean. As mentioned above, cow-calf operators are considered to be price takers. The benchmark price received for weaned calves was \$108.68 per cwt. Two ranches were vulnerable with regard to the amount of mineral and salt and protein supplement that was fed. Finally, the actual rainfall deviation from normal percentage is presented. Rainfall amounts varied greatly with eight of the eleven ranches experiencing below normal rainfall amounts. Four ranches experienced less than 75 percent of normal rainfall. While this affects the current year weaning weights and feed amounts, it also affects the pregnancy percentage for the calves weaned in the following year.

The second year's analyses were completed during 2008 for calves weaned in 2007. The benchmark means and standard deviations were calculated on 116 herds encompassing 63,005 breeding females. The eleven herds' second analysis was again compared to benchmark means and standard deviations.

The 2007 results were influenced by the operator's management, carryover drought conditions from 2006 for many of the herds, as well as inputs costs that were starting an unprecedented increase. Table 4 presents the production strengths and vulnerabilities. Compared to 2006, vulnerabilities increased from three to eight. The bulk of these were in one ranch (ranch 2) where drought conditions prevailed into 2007. Strengths changed very little.

Rising feed and fuel prices influenced the 2007 results. However, some ranches made changes to reduce their vulnerabilities. Overall, 25 vulnerabilities were identified across the eleven herds (Table 5). The largest change across the expense types was with fuel (Gasoline, Fuel, and Oil) and Feed Purchased. In 2006, these were vulnerabilities for zero and two ranches respectively. In 2007, three ranches were identified to have fuel as a vulnerability and three ranches were identified to have feed purchases as a vulnerability.

Three ranches showed improvement in the number of expense vulnerabilities. The greatest improvement was in Ranch 2 where the 2006 results showed four expense types as vulnerable. The 2007 results for Ranch 2 identifies only one expense item, Building and Improvement Depreciation, as still being outside 1.5 standard deviations from the benchmark mean. Three ranches maintained the number of identified vulnerabilities, while five of the herds' vulnerabilities increased.

Table 6 provides the 2007 miscellaneous strengths and vulnerabilities for the eleven ranches. Continued dry conditions increased the vulnerability of some ranches, particularly Ranch 2 where the 2006 drought conditions continued well into 2007. Rising costs and poor production performance combined to make the overall ranch vulnerable as shown by the breakeven price per cwt of weaned calves being tagged as a vulnerability. Likewise, Ranch 5 results show the increased nutrition (forage fed, mineral and salt fed, and protein supplement fed)

being supplied by the management and as such each was identified as a vulnerability.

This program allowed ranchers to identify their strengths and their vulnerabilities. It will become increasingly important that ranchers identify those areas that need attention and then take action to alleviate the risk. As pointed out by McCorkle, et.al., the real benefits and impacts for SPA occur after the third year of completion.

Table 2. 2006 Revenue and Expense per Breeding Female: Strengths and Vulnerabilities of Participating Cow-calf Herds.

	Benchmark Mean	Benchmark Stand Dev	Ranch 1	Ranch 2	Ranch 3	Ranch 4	Ranch 5	Ranch 6	Ranch 7	Ranch 8	Ranch 9	Ranch 10	Ranch 11
Gross Revenues	\$515.24	132.6			S					S			
Chemicals	\$6.16	9.4	V										V
Custom Hire	\$11.94	22.3											
Dep. – Livestock	\$38.14	34.5											V
Dep. – M/E	\$32.97	27.5											
Dep. – B/I	\$11.90	15.0		V									
Feed Purchased	\$67.81	42.8			V				V				
Fertilizer & Lime	\$33.38	40.4	V			V							
Freight	\$1.60	3.1		V			V						
Gasoline, Fuel, & Oil	\$22.49	16.8											
Insurance	\$10.67	15.8											
Hired Labor & Mgnt.	\$73.28	64.9				V				V			
Rents/Leases	\$38.78	47.0									V		
Repairs/Maintenance	\$34.59	29.0			V								
Seed & Plants	\$3.77	7.4											
Supplies	\$16.20	28.4											
Property Taxes	\$14.06	23.0								V			
Utilities	\$10.00	\$10.3		V	V								
Vet & Breeding	\$20.83	14.8			V		V						
Professional Fees	\$6.01	7.8		V				V		V			V
Miscellaneous	\$19.00	42.4											
Accrual Adj.	\$1.74	10.8											
Interest	\$21.77	44.0					V						
Family Withdrawals	\$22.21	26.9											
Total Costs	\$519.31	137.0			V					V			V

Table 3 2006 Miscellaneous: Strengths and Vulnerabilities of Participating Cow-calf Herds.

	Benchmark Mean	Benchmark Stand Dev	Ranch 1	Ranch 2	Ranch 3	Ranch 4	Ranch 5	Ranch 6	Ranch 7	Ranch 8	Ranch 9	Ranch 10	Ranch 11
Breakeven Price (dollars per cwt of weaned calf)	\$111.41	31.2											
Average Calf Price Received (\$/cwt)	\$108.68	14.0											
Average Cull Female Price (\$/cwt)	\$46.32	8.9											
Average Cull Bull price (\$/cwt)	\$59.23	10.8											
Total Investment (Cost Basis) per Breeding Female	\$3,159.73	3,352.0											
Total Liabilities per Breeding Female	\$416.12	731.5											
Pounds of Feed Fed per Breeding Female													
Forage	1,653.9	1,401.3											
Complete Feed	70.9	257.7											
Mineral & Salt	34.2	26.1						V					
Protein Supple.	298.4	327.8											V
Percent of Normal Annual Rainfall			73.7	81.3	103.4	71.7	69.5	120.5	78.3	118.8	85.7	85.7	57.1

Table 5. 2007 Revenue and Expense per Breeding Female: Strengths and Vulnerabilities of Participating Cow-calf Herds.

	Benchmark Mean	Benchmark Stand Dev	Ranch 1	Ranch 2	Ranch 3	Ranch 4	Ranch 5	Ranch 6	Ranch 7	Ranch 8	Ranch 9	Ranch 10	Ranch 11
Gross Revenues	\$527.85	145.8			S								
Chemicals	\$5.98	8.9											
Custom Hire	\$13.21	26.4			V	V							
Dep. – Livestock	\$38.10	33.9											
Dep. – M/E	\$30.58	26.8											
Dep. – B/I	\$12.60	18.7		V									
Feed Purchased	\$70.13	47.2			V		V		V				
Fertilizer & Lime	\$33.95	42.9	V			V							
Freight	\$1.79	3.2					V						
Gasoline, Fuel, & Oil	\$23.84	17.3				V				V			V
Insurance	\$12.15	17.0											
Hired Labor & Mgnt.	\$79.50	70.6				V				V			
Rents/Leases	\$38.87	46.8									V		
Repairs/Maintenance	\$35.07	29.3									V		
Seed & Plants	\$3.49	7.0											V
Supplies	\$15.82	26.5											
Property Taxes	\$14.55	23.5								V			
Utilities	\$10.83	11.8			V								
Vet & Breeding	\$20.99	16.0			V		V						
Professional Fees	\$6.37	7.8						V		V			
Miscellaneous	\$17.98	39.0											
Accrual Adj.	(\$0.28)	17.9					V	V					
Interest	\$22.56	44.8					V						
Family Withdrawals	\$20.68	26.0											
Total Costs	\$528.77	147.3			V	V				V			

Table 6 2007 Miscellaneous: Strengths and Vulnerabilities of Participating Cow-calf Herds.

	Benchmark Mean	Benchmark Stand Dev	Ranch 1	Ranch 2	Ranch 3	Ranch 4	Ranch 5	Ranch 6	Ranch 7	Ranch 8	Ranch 9	Ranch 10	Ranch 11
Breakeven Price (dollars per cwt of weaned calf)	\$112.03	32.9		V									
Average Calf Price Received (\$/cwt)	\$109.88	15.1			S								
Average Cull Female Price (\$/cwt)	\$47.31	11.1			S								
Average Cull Bull price (\$/cwt)	\$59.34	10.8											
Total Investment (Cost Basis) per Breeding Female	\$3,165.71	3,499.6											
Total Liabilities per Breeding Female	\$446.73	747.0					V						
Pounds of Feed Fed per Breeding Female													
Forage	1,633.1	1,409.9					V						
Complete Feed	68.1	240.4											
Mineral & Salt	34.8	25.1					V						
Protein Supple.	291.7	318.7					V						
Percent of Normal Annual Rainfall			100.0	53.1	109.5	143.9	119.1	95.9	103.5	137.5	121.4	100.0	100.0

References

Bevers, Stan and Dean McCorkle. 2009. Cow-calf Enterprise Standardized Performance Analysis. E-556. Texas AgriLife Extension Service. The Texas A&M University System. College Station, Texas.

McCorkle, Dean A., Dan Hanselka, and Stan Bevers. 2008. Economic Impact Brief: Economic Impact of Cow-calf Standardized Performance Analysis (SPA). MKT-3558T. Texas AgriLife Extension Service. The Texas A&M University System. College Station, Texas.