

SPA  
Standardized Performance Analysis  
For Cow/Calf Producers

-- A Worksheet Approach --

Cow/calf producers have been challenged to be lower cost producers, to become more competitive, and to increase market share and profits. The first step to becoming more efficient is to clearly determine and understand current production and financial performance. The Standardized Performance Analysis (SPA) system developed by the NCA-IRM-SPA is a tool to assist producers in calculating reproduction, production, financial, and economic performance measures.

The purpose of these worksheets is to provide the producer with the formulas and procedures for calculating commonly used production and financial measures. Monitoring these measures over time can help farm managers identify potential areas for change and help measure progress in meeting business goals and objectives. These results will help facilitate comparative analysis between production years, producers, production regions, and production systems. The worksheets in the publication were developed with the intent to provide a "user friendly" format for calculating several of the SPA measures.

**Worksheet 1: Measuring Reproduction and Production Performance**

The calculation column is designed for the producer to write down the required information necessary to perform the calculation. The answer column is then used to record the results of the calculation. The database column lists the maximum and minimum range of values collected from producers and the average of these numbers is listed below the range.

Example:		Calculation	Answer	Colorado Database Results	
		_____	_____	_____	
Preg. Rate (Percentage) =	No. of exposed cows diagnosed as pregnant	94			
	<u>No. of exposed cows</u>	<u>100</u>	.94 or 94%	92.7%	Avg.

Note: The procedure for calculating the number of exposed cows is at the bottom of Worksheet 1. The results of this calculation are used frequently in the reproduction and production measures.

**WORKSHEET 1: MEASURING REPRODUCTION AND PRODUCTION PERFORMANCE**

Colorado  
Database  
Results  
(Avg.)

Calculation      Answer

**Breeding and Gestation Performance Measures:**

<b>1. Pregnancy Rate (Percentage) =</b>	No. of exposed cows <u>diagnosed as pregnant</u> Number of exposed cows	_____	_____	92.7%
<b>2. Pregnancy Loss Percentage =</b>	No. of exposed cows diagnosed <u>as pregnant that failed to calve</u> No. of cows diagnosed as pregnant	_____	_____	3.3%
<b>3. Calves Born Per Cow Calving =</b>	<u>No. of calves born</u> No. of cows calving	_____	_____	.895 calves
<b>4. Calves Born Per Exposed Cow =</b>	<u>No. of calves born</u> No. of exposed cows	_____	_____	.887 calves

**Weaning Performance Measures:**

<b>5. Percent Calf Survival =</b>	<u>No. of calves weaned</u> No. of calves born	_____	_____	95.5%
<b>6. Calves Weaned Per Exposed Cow =</b>	<u>No. of calves weaned</u> No. of cows exposed	_____	_____	.850 calves
<b>7. Average Weaning Weights =</b>	<u>Total pounds weaned</u> Total no. of calves weaned	_____	_____	543 lbs.
<b>8. Lbs. Weaned Per Exposed Cow =</b>	<u>Total pounds weaned</u> No. of exposed cows	_____	_____	467 lbs.

**Calculating Number of Exposed Cows:**

	<u>Calculation</u>	<u>Answer</u>
Total number of cows exposed to bulls at the beginning of the breeding season.	_____	
Cows identified as culls not intended to calve.	(subtract) _____	
Cows sold or transferred out before breeding season ends.	(subtract) _____	
Exposed cows purchased or transferred in during the breeding season.	(add) _____	
Pregnant cows or cows with nursing calves transferred out.	(subtract) _____	
Pregnant cows or cows with nursing calves transferred in.	(add) _____	
NUMBER OF EXPOSED COWS	_____	

## **WORKSHEET 2: CALCULATING COST PER COW WORKSHEET**

This worksheet is designed to guide the producer through the process of calculating the cost per cow. The direct operating cost categories include: feed costs (purchased and raised feed), grazing expenses, and non-feed/non-grazing expenses.

Total feed costs are major production costs for the cow/calf enterprise. Purchased feed includes expenses for feed purchased as well as, actual or estimated, expenses incurred when feeding (i.e., labor, fuel, lube, machinery and equipment depreciation, etc.). Raised feed expenses include expenses, actual or estimated, incurred for feed production and feeding (i.e., chemicals, fertilizers, seed, fuel, labor, repairs, rents and leases, property taxes, machinery hire, and machinery and equipment depreciation).

Grazing expenses include costs related to the grazing activity (i.e., fencing, pasture and water improvements, and maintenance). For example, these expenses would include fuel and lube, labor, fertilizer, repairs, and other costs directly related to grazing.

Non-feeding/non-grazing expenses include all other expenses that can be directly tied to the cow/calf enterprise. For example, veterinary and medicine, breeding fees, freight and trucking, and supplies.

The indirect operating costs are those cash and non-cash expenses that cannot be easily associated with the cow/calf enterprise. These may include real property taxes, utilities, insurance, supplies, conservation expenses, etc. The financial cost of financing is the actual interest paid on borrowed capital but does not include principle payments. Real estate financing cost is the interest portion of the mortgage payment. Total costs include total operating costs (direct and indirect) plus total finance costs. Total cost per breeding cow equals total costs divided by the average number of breeding cows.

To estimate the total expense for the cow/calf enterprise it may be necessary to allocate total ranch expenses to an individual enterprise. There is no completely accurate procedure available to accomplish this task. Allocation can be based on time spent, mileage, hours, revenues, etc. Allocate costs by any method that seems fair for the enterprises involved.

# CALCULATING COST PER COW WORKSHEET

## 1. DIRECT OPERATING COSTS

### Feed Costs:

#### Purchased Feed Costs:

Hay	_____	
Grains/Concentrates	_____	
Supplements	_____	
Freight & Trucking	_____	
Storage	_____	
Other Purchased Feed Costs	_____	
Total Purchased Feed Costs		_____ (a)

#### Raised Feed Costs:

Fertilizer	_____	
Chemicals	_____	
Seed	_____	
Fuel & Lube	_____	
Machine Hire	_____	
Hired Labor	_____	
Rents & Leases	_____	
Property Taxes	_____	
Depreciation	_____	
Other Raised Feed Costs	_____	
Total Raised Feed Costs		_____ (b)

**Total Feed Costs (a + b)** \_\_\_\_\_ (c)

### Grazing Expense:

#### Grazing Costs:

Fencing	_____	
Pasture Improvements	_____	
Water Improvements	_____	
Trucking	_____	
Fuel & Lube	_____	
Maintenance	_____	
Other Grazing Costs	_____	
Total Grazing Costs		_____ (d)

#### Real Estate Costs on Grazing Land:

Lease Payments	_____	
Property Taxes	_____	
Real Estate Interest Pmt.	_____	
Depreciation	_____	
Other Real Estate Costs	_____	
Total Real Estate Costs		_____ (e)

**Total Grazing Expense (d + e)** \_\_\_\_\_ (f)

CALCULATING COST PER COW WORKSHEET CONTINUED

**Cattle & Other Non-Feed & Non-Grazing Expense:**

Veterinary & Medicine	_____
Breeding Fees	_____
Insurance	_____
Utilities	_____
Freight & Trucking	_____
Fuel & Lube	_____
Hired Labor	_____
Repairs & Maintenance	_____
Supplies	_____
Utilities	_____
Miscellaneous	_____
Mach. & Equip. Depreciation	_____
Bldg. & Improv. Depreciation	_____
Other Cattle Expenses	_____

**Total Cattle & Other Non-Feed & Grazing Expense** \_\_\_\_\_ (g)

**TOTAL DIRECT OPERATING COSTS (c + f + g)** \_\_\_\_\_ (h)

**2. INDIRECT OPERATING COSTS**

Real Property Taxes	
Utilities	_____
Insurance	_____
Supplies	_____
Other: _____	_____

**TOTAL INDIRECT OPERATING COSTS** \_\_\_\_\_ (i)

**3. FINANCE COSTS**

Interest Payments - Operating Loans	_____
Interest Payments: Non-Real Estate	_____
Interest Pmts.: Real Est. (Raised Feed Land)	_____
Interest Pmts.: Real Estate (Grazing Land)	_____
Other Interest Payments	_____

**TOTAL FINANCE COSTS** \_\_\_\_\_ (j)

**TOTAL COSTS (OPERATING + FINANCE) (h+i+j)** \_\_\_\_\_

		<u>Calculation</u>	<u>Answer</u>
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Total Cost	=	<u>Total Operating Cost + Total Finance Cost</u>	_____	_____
Per Breeding Cow		Average No. of Breeding Cows		_____

Average No. of Breeding Cows =	<u>Beginning Fiscal Year Inventory + Ending Fiscal Year Inventory</u>
	2

### WORKSHEET 3: MEASURING FINANCIAL & ECONOMIC PERFORMANCE

The enterprise financial data are developed from the operation's financial statements (balance sheet and income statement) and/or enterprise records. Worksheet 2 was created to assist in calculating many of the measures in Worksheet 3 (measures 4, 5, 6, 8 and 9). It is important to include all revenues and expenses, whether paid or yet to be paid, in production of calves in a given period. A simple balance sheet has been provided below to assist with the calculation for measures 1, 2 and 3. Be sure to include only those assets and liabilities that are used to support the cow/calf enterprise.

#### Balance Sheet -- Cow/Calf Enterprise

	Beginning <u>Balance</u>	Ending <u>Balance</u>		Beginning <u>Balance</u>	Ending <u>Balance</u>
<b>CURRENT ASSETS</b>			<b>CURRENT LIABILITIES</b>		
Cash & Checking	_____	_____	Accounts Payable	_____	_____
Accounts Receivable	_____	_____	Notes Payable	_____	_____
Prepaid Expenses	_____	_____	Current Portion of Term Debt	_____	_____
Inventories:			Accrued Interest	_____	_____
Marketable Livestock	_____	_____	Taxes Payable	_____	_____
Stored Crops & Feed	_____	_____	Deferred Taxes	_____	_____
Purchased Feed	_____	_____	Other Current Liabilities	_____	_____
Supplies	_____	_____	Other _____	_____	_____
Other Current Assets	_____	_____	Other _____	_____	_____
<b>TOTAL CURRENT ASSETS</b>	_____	_____	<b>TOTAL CURRENT LIAB.</b>	_____	_____
<b>NON-CURRENT ASSETS</b>			<b>NON-CURRENT LIABILITIES</b>		
Breeding Livestock	_____	_____	Notes Payable, Non-Real Estate	_____	_____
Machinery & Equipment	_____	_____	Notes Payable, Real Estate	_____	_____
Vehicles	_____	_____	Deferred Taxes	_____	_____
Contracts & Notes Receivable	_____	_____	Other Non-Current Liabilities	_____	_____
Real Estate	_____	_____	<b>TOTAL NON-CURR. LIAB.</b>	_____	_____
Buildings & Improvements	_____	_____	<b>TOTAL LIABILITIES</b>	_____	_____
Other Non-Curr. Assets	_____	_____	(Current & Non-Current)	_____	_____
<b>TOTAL NON-CURR. ASSETS</b>	_____	_____	<b>NET WORTH</b>	_____	_____
			(Total Assets - Total Liab.)	_____	_____
<b>TOTAL ASSETS</b>	_____	_____	<b>TOTAL LIAB.+NET WORTH</b>	_____	_____
(Current & Non-Current)					

**WORKSHEET 3: MEASURING FINANCIAL & ECONOMIC PERFORMANCE**

			<u>Calculation</u>	<u>Answer</u>	<u>Database Results</u>
1. Investment Per Breeding Cow	=	$\frac{\text{Average Enterprise Asset Value}}{\text{Average No. of Breeding Cows}}$	_____	_____	\$4,938 (Market value)
<i>Average Enterprise Asset Value</i>	=	$\frac{\text{Beg. Balance Sheet Asset Values} + \text{End. Balance Sheet Asset Values}}{2}$			
<i>Average Number Of Breeding Cows</i>	=	$\frac{\text{Beginning Fiscal Year Inventory} + \text{ending Fiscal Year Inventory}}{2}$			
2. Debt Per Breeding Cow	=	$\frac{\text{Total Cow-Calf Enterprise Liabilities}}{\text{Average No. of Breeding Cows}}$	_____	_____	\$1,2225 (Market value)
<i>Total Cow-Calf Enterprise Liabilities</i>	=	$\frac{\text{Beg. Balance Sheet Total Liabilities} + \text{End. Balance Sheet Total Liab.}}{2}$			
3. Percent Ownership	=	$\frac{\text{Investment Per Breeding Cow} - \text{(minus) Debt Per Breeding Cow}}{\text{Investment Per Breeding Cow}}$	_____	_____	75%
4. Total Operating Cost Per Breeding Cow	=	$\frac{\text{Total Operating Cost}}{\text{Average No. of Breeding Cows}}$	_____	_____	\$372.03

*Total Operating Costs are those cash and non-cash expenses that the cow-calf enterprise should cover, including: Purchased Feed, Raised Feed, Grazing Property Taxes, Utilities, Insurance, Supplies, Fuel & Lube, Hired Labor, Repairs, Rents & Leases, Depreciation (buildings, equipment, machinery, livestock) and Other Cow-Calf Enterprise Expenses.*  
*Note: Operating Costs do not include Financial (interest expense) or economic return (opportunity costs) to assets.*

*Total Feed Costs include purchased feed, raised feed, and adjustments for feed payable and feed inventory. Purchased Feed: Expenses for feed purchased and expense incurred when feeding. Raised Feed: Include expenses incurred for feed production and feeding (i.e., chemicals, fertilizers, seed, fuel & lube, labor, repairs, rents & leases, property taxes, machinery hire, depreciation, and other raised feed expenses). Adjustments for Feed Payable and Feed Inventory: Non-cash adjustments for feed purchased on credit and difference between ending and beginning feed inventories, respectively.*

**WORKSHEET 3: MEASURING FINANCIAL & ECONOMIC PERFORMANCE CONTINUED**

		<u>Calculation</u>	<u>Answer</u>	<u>Database Results</u>
6. Total Grazing Cost Per Breeding Cow	=	$\frac{\text{Total Grazing Costs} + \text{Real Estate Cost}}{\text{Average No. of Breeding Cows}}$	_____	_____
				\$110.65
<p><i>Grazing Costs: Include expenses related to the grazing activity (i.e. fencing, pasture and water improvements, etc.).</i>  <i>Real Estate Costs: Include lease payments, real estate interest payments, depreciation, maintenance, property taxes, etc.).</i></p>				
7. Gross Revenue Per Breeding Cow	=	$\frac{\text{Cash Revenue} + \text{Non-Cash Revenue}}{\text{Average No. of Breeding Cows}}$	_____	_____
				\$570.63
<p><i>Cash Revenue: Include cash receipts from sales of steers, heifers, gain or loss on sale of breeding stock, and other cash receipts.</i>  <i>Non-Cash Revenue: Include change in beginning and ending inventories and accounts receivable for revenues earned.</i></p>				
8. Total Finance Cost Per Breeding Cow	=	$\frac{\text{Interest Payments} + \text{Accrued Interest}}{\text{Average No. of Breeding Cows}}$	_____	_____
				\$65.14
<p><i>Interest Payments: Include actual interest paid on borrowed capital but do not include principle payments.</i>  <i>Accrued Interest: Includes all interest that has accrued on borrowed capital but has not been paid.</i></p>				
9. Total Cost Per Breeding Cow	=	$\frac{\text{Total Operating Cost} + \text{Total Finance Cost}}{\text{Average No. of Breeding Cows}}$	_____	_____
				\$475.48

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