GRAZING YEARLING BEEF — AN ENTERPRISE ANALYSIS

Northwest and Mountain Region Colorado

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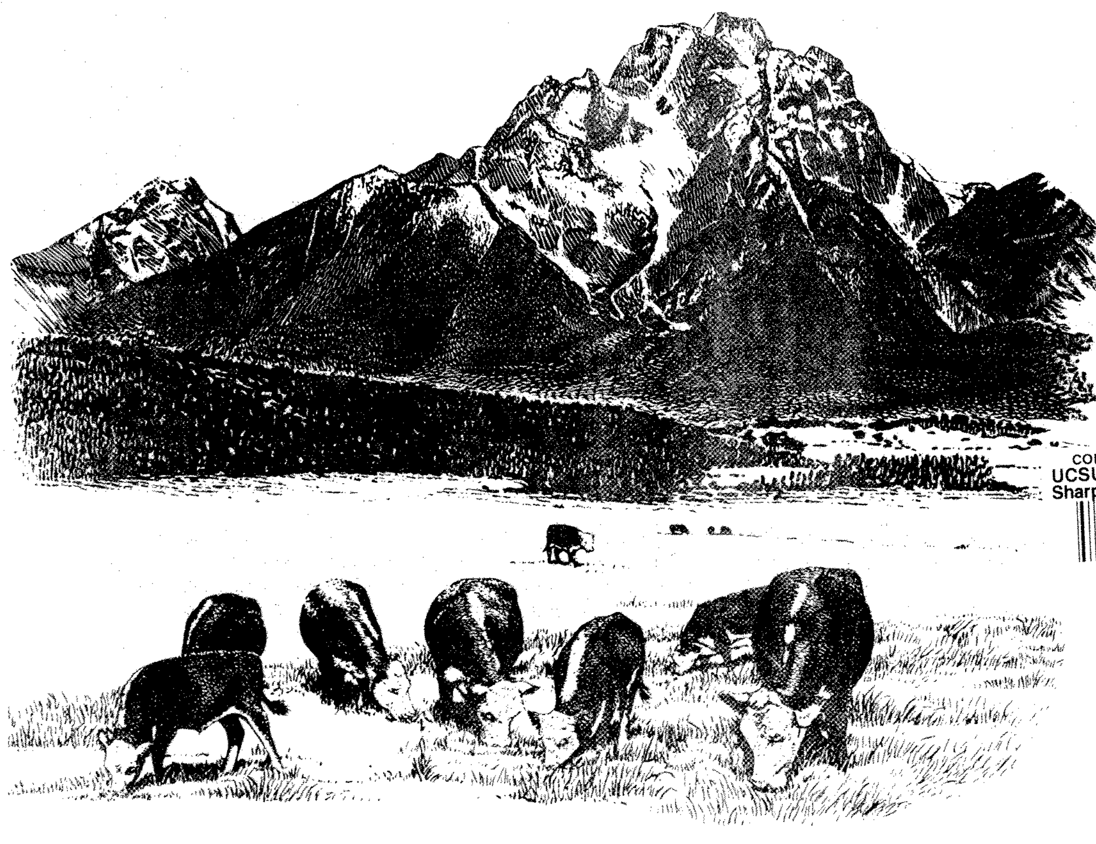

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Grazing Yearling Beef - An Enterprise Analysis

Northwest and Mountain Region, Colorado

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INTRODUCTION

Growing yearlings requires knowledge and experience and introduces risk not common with home-raised calves. Fleshy yearlings may lose weight and be poor gainers before adjusting to a new environment and feeds. On the other hand, yearlings that are overly thin and stressed may be subject to disease or higher death losses than projected.

Livestock managers must secure and interpret information that relates to production, marketing and financing of their operation. This information aids financial management so long as it can increase profit or minimize losses. Simply keeping records has little to do with profit unless those records are used to pinpoint production/marketing changes or alternatives.

An enterprise budget can be useful to analyze the many production and marketing alternatives on a ranch. Enterprise budgets are used to determine the break-even prices and provide important information to analyze the profit potential of different production-marketing strategies. Break-even analysis also can be used to establish asking prices for livestock. However, the analysis does require realistic economic data. What are potential prices? Costs? Pasture and feed requirements? When are inputs required? How much operating and ownership capital is needed? The enterprise budget is a good tool to analyze alternative production and marketing strategies.

ENTERPRISE BUDGET

The 1989 yearling cattle enterprise budget (Table 1.) reflects assumptions of price, gain, inputs, etc. to estimate profitability of purchasing yearling steers in the spring and running on grass over the summer then selling in the fall. Costs and returns may vary from operation to operation, however, the budget developed contains most revenue and cost elements. Livestock management requires realistic economic data. What are pasture requirements? Rates of gain? Market Prices? The enterprise budget is a useful tool to help answer these and other management questions. The major sections of the budget are **Production and Marketing Assumptions, Operating Receipts, Cash Operating Costs** and **Net Receipts above Operating Costs.** The **Production and Marketing Assumptions** section lists major assumptions used to develop the budget. Herd size represents the total number of yearlings purchased or size of the enterprise. This section also shows the number of steers purchased, average daily gain (ADG), death loss, cost of gain per cwt, average pounds gained, and length of grazing period. Also identified in this section are sale item descriptions, market weights, market months, number of head marketed and percent of the total herd size represented by each of the sale descriptions.

Table 1. COLORADO LIVESTOCK ENTERPRISE BUDGET

Enterprise: Yearling Cattle - Steers Year: 1988-89
Region: Northwest and Mountain Budget I.D. Number L6002B10
Rate of Gain: Steers - 2.00 lbs.

<<PRODUCTION AND MARKETING ASSUMPTIONS>> Total Herd Size: 600

	1. Steers	2. Heifers
Number of head	600	0
Average Daily Gain	2.00	0.00
Death Loss (percent)	2.00%	0.00%
Cost of Gain per cwt.	49.16	0.00
Average Pounds Gained	300.00	0.00
Avg. Grazing Season (days)	150.00	0.00

Livestock Description	Units	Market Weights	Market Month(s)	Number of Head Marketed	Percent of Herd
1. Steers	Cwt.	9.00	NOV.	588	100.00%
2.		0.00		0	0.00%
3.		0.00		0	0.00%

<< OPERATING RECEIPTS >>

Livestock sales:

	Description	Unit	Price	Prod. Per Head	Value Per Head	Total	Your Value
4.	Steers	Cwt.	79.50	8.82	701.19	420714	________
5.			0.00	0.00	0.00	0	________
6.				0.00	0.00	0	________
7.				0.00	0.00	0	________
8.	Total Receipts				701.19	420714	________

<< DIRECT COSTS >>

Feed, Purchased and Raised:

	Description	Unit	Price	Quantity Per Head	Value Per Head	Total	Your Value
9.	Federal Lease	AUM	1.86	1.40	2.60	1562	________
10.	Pasture Lease	AUM	10.00	2.10	21.00	12600	________
11.	Salt & Mineral	Lbs	0.50	5.00	2.50	1500	________
12.	Hay	Ton	70.00	0.27	18.90	11340	________
13.					0.00	0	________
14.					0.00	0	________
15.					0.00	0	________
16.					0.00	0	________
17.	Total Feed Expenses				45.00	27002	________

Other Operating Costs:

	Description	Value Per Head	Total	Your Value
18.	Hired Labor	6.25	3750	________
19.	Repairs: Machinery, Bldg. & Equipment	6.81	4086	________
20.	Machinery/Equipment Labor	0.00	0	________
21.	Livestock Labor	0.00	0	________
22.	Machine Hire/Truck	0.00	0	________
23.	Supplies	2.35	1410	________
24.	Vet. Medicine	2.10	1260	________
25.	Fuel, Oil, Lubricants	3.12	1872	________

26.	Breeding fees, Preg, check, etc.		0.00	0	_________
27.	Miscellaneous		2.43	1458	_________
28.	Utilities		2.22	1332	_________
29.	Transportation		5.75	3450	_________
30.	Marketing Charges		6.50	3900	_________
31.	Shrink (Actual & Pencil)		10.86	6516	_________
32.	Interest On Operating Capital	10.00%	24.80	14878	_________
33.	Total Other Operating Costs		73.19	43912	_________

Livestock Purchased (or raised) for Resale:

	Description	Unit	Price	Weight	Value Per Head	Total	Your Value
34.	Str Calf	Cwt.	85.00	6.00	510.00	306000	_________
35.					0.00	0	_________
36.					0.00	0	_________
37.	Total Livestock Purchase/Resale Costs				510.00	306000	_________
38.	Total Cash Operating Expenses				628.19	376915	_________

Property and Ownership Costs:

39.	Depreciation		10.00	6000	_________
40.	Taxes		5.00	3000	_________
41.	Insurance		8.00	4800	_________
42.	General Overhead	1.00%of Operating Costs	6.28	3769	_________
43.	Other		0.00	0	_________
44.	Total Property and Ownership Costs		29.28	17569	_________
45.	Total Direct Costs		657.47	394484	_________
46.	Net Receipts (Return to capital, land, mgt. and risk)		43.72	26230	_________

<< PURCHASE PRICE BREAK-EVEN ANALYSIS >>

Break-even purchase price for steer and heifer calves with the given costs of gain per head at different market prices

Estimated market price		10.00% Less than estimated steers $132.73 heifers		Estimated cost of gain steers $147.47 heifers		10.00% More than estimated steers $162.22 heifers	
Per lbs		. . . . Break-Even Purchase Price in Cwt					
Str	Hfr	Str	Hfr	Str	Hfr	Str	Hfr
0.78		91.80		89.13		86.89	
0.80		94.74		91.93		89.83	
0.82		97.68		94.73		92.77	
0.84		100.62		97.52		95.71	

Purchase weight for steers 600.00 & heifers 0.00 lbs
Average market weight for steers 900.00 & heifers 0.00 lbs

The **Operating Receipts** section contains the market prices, production per head, value per head, and total receipts for all sources of revenue associated with the yearling cattle budget.

The **Direct Costs** are the total costs associated with the production of the enterprise. This section consists of four categories: 1) Feed Purchased and Raised, 2) Other Operating Costs, 3) Livestock Purchases or Raised For Resale, and 4) Property & Ownership Costs. The first three cost categories represent Total Cash Operating Expenses or Variable Costs of Production. These costs are proportional to the enterprise size and must be covered if production should take place. In the short run (production year), the producer has control over these expenses and from a management standpoint, if these variable costs cannot be covered by total receipts the producer should consider other production, marketing and/or financial management alternatives. Property and ownership costs represent fixed costs of production. These costs are incurred and must be paid whether production takes place or not. Total Direct Costs are simply the sum of the total cash operating expenses and total fixed costs of property and ownership.

Net Receipts are the difference between total receipts (line 8) and total direct costs (line 45). Net receipts represent the returns to capital, land, management and risk.

The break-even analysis is a useful tool in enterprise selection. This section shows the break-even purchase price for the steers for three cost of gain levels (estimated, 10 percent greater than estimated, and 10 percent less than estimated) and five different market sell prices. The estimated cost of gain is made up of 1) feed costs; 2) total other operating costs less interest; 3) interest on all operating costs (feed, other variable and livestock purchase cost) for 150 days; and 3) fixed costs (1% overhead on all variable costs; depreciation taxes, and insurance.

A brief overview of the Yearling Cattle Enterprise Budget indicates that the 600 head yearling steer operation had gross receipts of $420,714 or $701.19 per head and total operating costs of $376,915 or $628.19 per head and property and ownership costs of $17,569 or $29.28 per head. The net receipts ($420,714 - $376,915 - $17,569) are $26,230 or $43.72 per head. This value reflects the money the operator has to live on, make principal payments on debt, save and/or invest. (Personal tax liability must also be determined and subtracted from the net receipt value.)

Many other assumptions were used to develop the enclosed budget. Below is a summary of these assumptions and some additional information relating to a purchased yearling operation:

AUM requirements: AUM stands for Animal Unit Month and relates to sustaining an Animal Unit (AU) for one month. A standard AU is one mature beef cow with or without calf at side. A yearling steer or heifer is considered to be 0.7 of a cow unit or 0.7 AU. A grazing season may vary between 120 to 180 days and 150 days (5 months) was used for this budget. Therefore, a 600 head yearling steer operation would require 2,100 AUM's of grazing (600 head x 0.7 AU/head x 5 months) and it would 3.5 AUM's/head (2,100 AUM's/600 head).

Land Base - Irrigated meadows in Northwestern Colorado usually support approximately 1 - 1.5 AUM's per acre, non-irrigated mountain meadows .42 AUM's per acre, and native range .21 AUM's per acre.

Lease rates - Lease rates vary by intensity or services provided. Typical private lease rates for this area can range from $6.00 per AUM with minimal services to $10.00 per AUM with most services provided. Services include fence upkeep and repair, water supply, herding, etc. There is an increased trend to base the lease rate on actual gain. The average charge for gain can range from $.18 - $.22 per pound of gain.

Production - Production is measured in two ways, pounds of beef produced per acre or gain per animal over a typical grazing period. Yields over a 150 day grazing period should be expected to reach 225 pounds under range grazing (ADG = 1.5 lbs.) to over 300 pounds when utilizing irrigated meadows (ADG = 2.0+ lbs.). Weight gains may be enhanced using growth promotants. Average Daily Gains may be increased by approximately .15 to .25 pounds, the use of implants is generally considered to be cost effective.

Health Management - Health management can significantly contribute to net returns. It is important to consult a local veterinarian.

Markets - The most common method of marketing livestock are terminal market sales and private treaties. The majority of the livestock raised in the Northwest and Mountain Region are shipped to the front range. The major markets are in Fort Collins, Greeley, and Brush. Approximate distances from Northwestern Colorado are 165 miles, 205 miles, and 255 miles respectively. Transportation charges can vary from dollars per loaded mile to a per hundred weight cost. Estimated shipping expense is approximately $2.00 per loaded mile. Cattle marketed locally usually go through "country traders". Alternate marketing methods such as video auction sales are increasing and beginning to have considerable local impact.

BUY-SELL MARGINS

Price roll-back or back or buy/sell refers to the amount of price decrease between the purchase price and sale price that can be endured before prices drop below the break-even level.

Using the yearling steer budget as an example, the purchase price for the 600 lbs steers in May or June was $85.00 per cwt. or $510 per head (line 34). The steers gain 300 pounds (2.0 lbs. ADG for 150 days) during the feeding period and are sold in November at 900 lbs. for $79.50 per cwt. or $701.19 per head. The difference ($701.19 - $510.00), $191.19, is the value of the gain. On a total gain of 300 lbs. that is 64 cents per pound ($191.19/300 lbs.).

Comparing the value of gain with expected costs of gain provides an indication of probability. Assume it costs $.49 per pound to produce 300 pounds of gain during the feeding period for a total cost of $147.47. This gain sells for $238.50 (300 lbs. x $79.50 per cwt.) yielding a profit of $91.03 on the weight gain. But the original purchase price of $510 (600 lbs x $.85 per lb) sold for $477 (600 lbs x $.795 lb) or a loss of $33.00 due to the price roll-back or negative buy/sell margin.

When the $91.03 profit on weight gain is combined with the $33.00 loss, there is a net gain/loss of $58.03 per head. Obviously, a smaller or positive price roll-back or buy/sell margin, a higher rate of gain and/or a lower cost of gain would change the result of this example. In short, if cost of gain exceeds yearling purchase, a higher market sell price will be required at completion to permit a break-even or profitable situation. If the cost of gain is less than the yearling purchase price, some roll-back in prices may be acceptable to meet a profit objective. Again using the budget as an example, if the total cost of gain is $49.00/cwt. vs. $85/cwt. original purchase price, a 600 lb yearling steer that gains 300 pounds can have a price roll-back of $-11.71/cwt. or the sell price can be $11.71 less than the purchase price, while the same yearling gaining 350 lbs (2.33 lbs ADG) can have a price roll back of $-12.94/cwt. and still break-even.

This is illustrated in Table 2 which lists the price roll-back or buy/sell margins needed to break-even on a 600 pound steer for various cost of gains and for different levels of gain. The point is, price roll-back is a critical factor in a purchased yearling enterprise.

Table 2. Roll-back or Buy/Sell Margins Needed to Breakeven on a 600 Lb Yearling Steer at Various Cost of Gain and Levels Of Gain

Production and Cost Assumptions	VALUE	UNITS
Number of Head	600	HEAD
Initial Weight (lbs)	600	LBS
Purchase/Market Price ($/cwt)	$85.00	$/CWT
Average Daily Gain	2.00	LBS/DAY
Death Loss	2.00%	PERCENT
Total Feed Costs	$45.00	$/HEAD
Total Other Operating Costs	$73.19	$/HEAD
Total Fixed Costs	$29.28	$/HEAD
Total Costs	$147.47	$/HEAD
Average Grazing Season (days)	150	DAYS
Average Pounds Gained	300	LBS
Average Pay Weight	900	LBS
Estimated Cost of Gain	$0.49	$/LB
Sale/Market Price ($/cwt)	$79.50	$/cwt

PROJECTED COST OF GAIN	AMOUNT OF GAIN, LBS. 200	250	300	350	400	450
	NECESSARY ROLLBACK (BUY/SELL MARGIN) TO BREAKEVEN, $/CWT					
0.36	-11.97	-14.08	-15.96	-17.64	-19.16	-20.52
0.38	-11.51	-13.54	-15.34	-16.96	-18.41	-19.72
0.40	-11.02	-12.96	-14.69	-16.23	-17.62	-18.88
0.42	-10.50	-12.35	-14.00	-15.47	-16.80	-18.00
0.44	-9.96	-11.71	-13.27	-14.67	-15.93	-17.07
0.47	-9.38	-11.04	-12.51	-13.83	-15.01	-16.09
0.49	-8.78	-10.33	-11.71	-12.94	-14.05	-15.05
0.52	-8.18	-9.62	-10.91	-12.05	-13.09	-14.02
0.54	-7.55	-8.88	-10.06	-11.12	-12.08	-12.94
0.57	-6.88	-8.10	-9.18	-10.14	-11.01	-11.80
0.60	-6.19	-7.28	-8.25	-9.12	-9.90	-10.60
0.63	-5.45	-6.42	-7.27	-8.04	-8.73	-9.35
0.66	-4.69	-5.51	-6.25	-6.91	-7.50	-8.03

BREAK-EVEN SELL PRICE

Table 3 lists the necessary sale prices for a 900 pound steer at varying initial yearling purchase prices and different costs of gain, according to the following formula:

$$\text{Break-even Sell Price} = \frac{(\text{Purchase Value x Wt}) + (\text{Cost of Gain x Gain})}{\text{Final Market Weight}}$$

If the price expectations for the 900 pound steer are such that prices will significantly exceed (including a profit objective) the estimated break-even sale price, the yearling enterprise may be a viable alternative.

BREAK-EVEN PURCHASE PRICE

Table 4 shows the amount that can be paid (break-even) for the yearling steers given a range of market sell prices and varying costs of gain according to the following formula:

$$\text{Break-even Purchase Price} = \frac{(\text{Final Market Price x Wt.}) - (\text{Cost of Gain x Gain})}{\text{Initial Calf Weight}}$$

In any of the examples illustrated, an estimate of your costs of production/gain is absolutely necessary. The same type of analysis can be performed for heifers, raised yearlings, etc.. It is important to evaluate each group or category of livestock separately. The differences in performance (weight gains, cost of gains, nutritional requirements, etc.) impact these break-even values. The enterprise budget is a valuable tool in estimating these differences.

Table 3. Breakeven Sale Prices for 600 -Lb Feeder Steer Fed to 900 Lb. Market Weight, 2.00 -Lb ADG, 150 -days

Initial Purchase/Market Yearling Price	Cost of gain, $/Lb				
	$0.36	$0.42	$0.49	$0.57	$0.66
$/CWT	Breakeven Price 900 -Lb Steer, $/cwt				
$100.00	77.14	79.10	81.39	83.92	86.85
$97.00	75.18	77.14	79.43	81.96	84.89
$94.00	73.22	75.18	77.47	80.00	82.93
$91.00	71.26	73.22	75.51	78.04	80.97
$88.00	69.30	71.26	73.55	76.08	79.01
$85.00	67.34	69.30	71.59	74.12	77.05
$82.00	65.38	67.34	69.63	72.16	75.09
$79.00	63.42	65.38	67.67	70.20	73.13

Table 4. Breakeven Feeder Value for 600 -Lb Feeder Steer Fed to 900 Lb. Market Weight, 2.00 -Lb ADG, 150 -days

Estimated Market Price at 900 Lb.	Cost of gain, $/Lb				
	$0.36	$0.42	$0.49	$0.57	$0.66
$/CWT	Break-even Value 600 -Lb Steer, $/cwt				
$87.50	110.92	107.97	104.54	100.74	96.35
$85.50	107.98	105.03	101.60	97.80	93.41
$83.50	105.04	102.09	98.66	94.86	90.47
$81.50	102.10	99.15	95.72	91.92	87.53
$79.50	99.16	96.21	92.78	88.98	84.59
$77.50	96.22	93.27	89.84	86.04	81.65
$75.50	93.28	90.33	86.90	83.10	78.71
$73.50	90.34	87.39	83.96	80.16	75.77