

Using Partial Budgeting to Analyze Drought Management Strategies

Quick Notes...

To minimize financial hardship under drought conditions, partial budgeting is a tool that can be used to compare different management strategies.

It is important to develop your own numbers for the drought strategies you are considering. Everyone's situation is unique and should be evaluated individually.

As drought conditions continue, increasing numbers of livestock producers will be faced with some critical decisions relating to their breeding herds. Poor forage conditions and shortened grazing seasons will force producers to analyze different alternatives to cope with drought impacts.

Partial Budgeting

A partial budget is a valuable management tool used to analyze an incremental change in a given enterprise. By employing budget principles, a manager can compare the economic impact (costs and returns) of alternative drought plans.

Partial budgeting is based on the principle that changes made in the farm or ranch business due to drought conditions will have one or more of the following effects:

- 1) eliminate or reduce some costs;
- 2) eliminate or reduce some returns;
- 3) increase some costs;
- 4) increase some returns.

The net effect will be the sum of positive economic effects minus the sum of negative economic effects.

Drought Example Analysis

This article is designed to help livestock producers analyze or compare different drought management strategies. To demonstrate the process, four possible strategies are compared. These represent only four of many possible drought management strategies to consider.

1. Transport livestock (cow pairs) to another source of forage.
2. Drylot livestock (both cows and calves).
3. Liquidate livestock and buy back at a later date.
4. Wean early, drylot calves, sell cows, and buy back cow/calf pairs at a later date.

Worksheet 1 shows the basic format of a typical partial budget. The positive impacts (reduced costs and additional returns) are listed on the top of the budget. The negative impacts (additional costs and reduced returns) are listed on the lower part of the budget.

Worksheet 1: Partial Budget Format

Proposed Change: _____

Assumptions: _____

Key Factors: _____

Positive Impacts:

Reduced Costs

Total Reduced Costs (A) \$ _____

Additional Returns

Total Additional Returns (B) \$ _____

Total Positive Impacts (A + B) (C) \$ _____

Negative Impacts:

Additional Costs

Total Additional Costs (D) \$ _____

Reduced Returns

Total Reduced Returns (E) \$ _____

Total Negative Impacts (D + E) (F) \$ _____

TOTAL NET EFFECT (C - F) = \$ _____

The following analysis is used to demonstrate how partial budgeting can be used to compare the four different drought management strategies. The results of the analysis are listed in Worksheet 2. See the appendices for detailed budgets. The strategies can be ranked according to the net effect. Pay careful attention to the assumptions made in the analysis. Different assumptions can change the results substantially.

The least costly strategy, based on the assumptions, is Strategy 4. The cost of this plan would be approximately \$5,296 or \$21.18 per cow. Second in comparison was Strategy 3 with an expected cost of \$44,998 or \$179.99 per cow. Retaining ownership appears to be much more costly due to the high cost of feed and high

transportation costs. Strategy 1 (transport cow/calf pairs to grass) has an expected loss of \$58,889 or \$236.56 per cow and Strategy 2 (drylot both cows and calves) has an expected loss of \$65,839 or \$263.36 per cow.

Certainly there are other biological, genetic, and related issues that must be considered. The availability of cow/calf pairs adapted to your environment is another important concern, particularly ranches located at higher elevations. Current carryover hay and forage inventories, availability of other crops for feed, and uncertainty about market conditions in the coming year, may play an important role in the final decision.

Worksheet 2: Partial Budget Drought Analysis Results

Strategy	1 Transport to <u>Grass</u>	2 Drylot Pairs	3 Liquidate & <u>Buy Back</u>	4 Early Wean Sell Cows <u>Drylot Calves</u>
Positive Impacts:				
Reduced Costs	784	784	74,451	75,235
Additional Returns	0	0	439,018	356,655
Total Positive Impacts	\$784	\$784	\$513,469	\$431,890
Negative Impacts:				
Additional Costs	59,673	66,623	368,198	414,585
Reduced Returns	0	0	160,269	22,601
Total Negative Impacts	\$59,673	\$66,623	\$558,467	\$437,186
Net Effect	\$-58,889	\$-65,839	\$-44,998	\$-5,296
Net Effect Per Cow	\$-236.56	\$-263.36	\$-179.99	\$-21.18

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Appendix A

Strategy 1 - Transport Cow/Calf Pairs to Grass

- Assumptions:
1. 250 cows with 45 replacement heifers
 2. Pull off of Federal grazing 2 months early
 3. Transport 500 miles one-way
\$4.50 per loaded mile
30 pairs per load
 4. Pasture \$22/AUM for 3 months
 5. 30 day feed supply around Ranch

- Key Factors:
1. Transportation Costs (Distance)
 2. Pasture Rental Rate
 3. Normal year summer pasture cost

Positive Impacts:

Reduced Costs

Federal Grazing

250 pairs x \$1.35 x 2 months = \$ 675

45 repl. heifers x .9 x \$1.35 x 2 mo. = 109

Total Reduced Costs (A) \$ 784

Additional Returns

None

Total Additional Returns (B) \$ 0

Total Positive Impacts (A+B) (C) \$ 784

Negative Impacts:

Additional Costs

Transportation

Cow/Calf Pairs: 8 Trucks x 1000 miles x \$4.50 = \$36,000

Replacements: 1 Truck x 1000 miles x \$4.50 = \$ 4,500

Pasture Rent

250 pairs x \$22/AUM x 3 months = \$16,500

45 repl. heifers x .9 x \$22/AUM x 3 months = \$ 2,673

Total Additional Costs (D) \$59,673

Reduced Returns

None

Total Reduced Returns (E) \$ 0

Total Negative Impacts (D+E) (F) \$59,673

TOTAL NET EFFECT (C-F) = \$-58,889 or \$-236.56 per cow

Appendix B

Strategy 2 - Drylotting Cow/Calf Pairs

- Assumptions:
1. 250 cows with 45 replacement heifers
 2. Drylot cow/calf pairs for 3 months
 3. Hay 25 lbs. per day (\$180/ton or \$0.09/lb.)
 4. Barley 3 1/3 lbs. per day (.10/lb. or 4.80/bu.)
 5. 30 days clean-up around the Ranch

- Key Factor(s):
1. Feed Costs
 2. Normal year summer pasture costs

Positive Impacts:

Reduced Costs

Federal Grazing

250 pairs x \$1.35 x 2 months = \$ 675

45 heifers x .9 x \$1.35 x 2 months = \$ 109

Total Reduced Costs (A) \$ 784

Additional Returns

None

Total Additional Returns. (B) \$ 0

Total Positive Impacts (A+B) (C) \$ 784

Negative Impacts:

Additional Costs

Hay

25 lbs. x 90 days x 250 pairs x \$.09/lb. = \$50,625

20 lbs. x 90 days x 45 repl. x \$.09/lb. = \$ 7,290

Barley

3 1/3 lbs. x 90 days x 250 pairs x \$.10/lb. = \$ 7,493

3 lbs. x 90 days x 45 repl. x \$.10/lb. = 1,215

Total Additional Costs (D) \$66,623

Reduced Returns

None

Total Reduced Returns (E) \$ 0

Total Negative Impacts (D+E) (F) \$66,623

TOTAL NET EFFECT (C-F) = \$-65,839 or \$-263.36 per cow

Appendix C

Strategy 3 - Liquidate Cow/Calf Pairs in 2012 and Buy Back in 2013

Assumptions:

1. 250 cows with 45 replacement heifers
2. Sell cow/calf pairs for \$1,500 per pair, 45 repl. heifers for \$1,350
3. Buy back in 2013 for \$1,500 per pair
4. Sales income draws interest at 1% for 9 months (Aug. '12 - April '13)

Key Factor(s)

1. Cow/calf pair sale price
2. Cow/calf pair buy back price
3. Availability of cow/calf pairs for buy back
4. Interest income

Positive Impacts:

Reduced Costs

Federal Grazing

250 pairs x \$1.35 x 2 months = \$ 675

45 heifers x .9 x \$1.35 x 2 months = \$ 109

Winter Feeding

Hay - 2.1 ton x 250 hd x \$100 = \$ 52,500

Grain - .3 cwt x 250 x \$11 = \$ 825

Salt/Min. - 30 lbs. x 250 x .22 = \$ 1,650

Other Variable Expenses (103.87 x 9/12 x 250) = \$ 19,476

Total Reduced Costs (A) \$ 74,451

Additional Returns

Cow/Calf Pairs - 250 hd x \$1,500 = \$375,000

Replacement heifers - 45 hd. x \$1,350 \$ 60,750

Interest Income - \$435,750 x 1% x 9/12 of a year = \$ 3,268

Total Additional Returns (B) \$439,018

Total Positive Impacts (A+B) (C) \$513,469

Negative Impacts

Additional Costs

Marketing Expenses: 3% of gross (.03 x \$435,750) = \$ 13,073

Transportation: 9 trucks x 250 miles x \$4.50 = \$ 10,125

Buy Back: 250 cow/calf pairs x \$1,500.00 = \$375,000

Total Additional Costs. (D) \$398,198

Reduced Returns

Steers: 110 hd x 585 lbs. x \$1.36 = \$ 87,516

Heifers: 68 hd. x 563 lbs. x \$1.31 = \$ 50,152

Cull Cows: 35 hd. x \$0.63 x 1025 lbs. = \$ 22,601

Total Reduced Returns (E) \$160,269

Total Negative Impacts (D+E). (F) \$558,467

TOTAL NET EFFECT (C-F) = \$-44,998 or \$-179.99 per cow

Appendix D

Strategy 4 - Early Weaning, Drylotting Calves, Selling Cows, Buying Back Cow-Calf Pairs in 1997

Assumptions: 1. Sell cows and replacement heifers for \$1,200
 2. Buy pairs back in 2013 for \$1,500 per pair
 3. Sales income earn interest at 1% for 9 months

Key Factor(s) 1. Cow sale price
 2. Cow/calf pair buy back price
 3. Availability of cow/calf pairs for buy back
 4. Interest income
 5. Feed costs (calves)

Positive Impacts:

Reduced Costs

Federal Grazing	= \$ 784
Winter Feeding	= \$ 54,975
Other Variable Expenses (Labor, Fuel & Utilities)	= \$ <u>19,476</u>
Total Reduced Costs	(A) \$ 75,235

Additional Returns

Cows - 250 hd x \$1,200	= \$300,000
Replacement heifers - 45 hd. x \$1,200	\$ 54,000
Interest Income - \$354,000 x 1% x 9/12 of a year	= \$ <u>2,655</u>
Total Additional Returns	(B) \$356,655

Total Positive Impacts (A+B) (C) \$431,890

Negative Impacts:

Additional Costs

Marketing Expenses: 3% of gross (.03 x \$389,250) (Comm., Brand Insp., Health Inspection, etc.)	= \$ 11,678
Transportation: 8 trucks x 250 miles x \$4.50	= \$ 9,000
Feeding Calves:	
Hay - 10 lbs. x 90 days x .09 x 208 hd.	= \$ 16,848
Grain - 1 lb. x 90 days x .11 x 208 hd.	= \$ 2,059
Cow Purchase: 250 pairs x \$1,500	= <u>\$375,000</u>
Total Additional Costs	(D) \$414,585

Reduced Returns

Cull Cows: 35 hd. x \$0.63 x 1025 lbs.	= \$ <u>22,601</u>
Total Reduced Returns	(E) \$ 22,601

Total Negative Impacts (D+E). (F) \$437,186

TOTAL NET EFFECT (C-F) = \$-5,296 or \$-21.18/cow