



Breakeven Analysis for Feeder Cattle

Introduction

Breakevens are specialized partial budgets used to evaluate feeder cattle purchase and sale decisions. The decision to sell at weaning, to background, or to finish a calf should be reviewed constantly throughout the feeding period as prices and input costs change. A breakeven analysis is the ideal tool to carry out that review.

Why Are Breakevens Important?

Using breakeven analysis to help decide when to sell or buy feeder cattle has a number of advantages. Breakevens are easy to calculate. They relate specifically to a single farm rather than provincial averages. They are an excellent way to compare different marketing alternatives, such as selling weaned calves versus selling finished steers. Most important, breakeven prices reflect the current state of the market rather than long-term generalizations.

The following sample breakeven worksheet is intended to illustrate which prices and costs need to be included in a breakeven calculation. Useful breakeven calculations depend on accurate knowledge of current calf prices, production costs, and possible future selling prices.

Table 1 presents an example of a breakeven calculation for a feedlot backgrounding a 500 lb. steer. This is only an example and is not indicative of current market conditions. The breakeven calculation is based on feeding the steer for 150 days at an average rate of gain of 2.0 lbs. /day. The worksheet starts with the value of the purchased calf and the projected value of the calf after 150 days on feed.

The next sections, *Feed Costs and Other Costs*, may vary from farm to farm and year to year. In *Feed Costs*, the ration fed is averaged over the time the calf is on feed. If more than one ration is used the cost can be divided into separate feeding periods.

The section *Other Costs* reflects the costs on a producer's farm. Breakeven values are often calculated without a built-in profit margin but it is a good idea to include a return to cover risk. Consider it a cushion to cover unseen errors or miscalculations. This margin can vary between producers because of a number of factors. For instance, financial situation, market risk management strategies employed such as hedging or forward pricing and risk preference are a few impacting factors. In other words, how much risk the producer is comfortable with. In this example, a \$5.00/head profit margin is a fixed minimum return. A "normal" range for profit margins is \$5 to \$35/head.

Yardage costs factor in too and include bedding, mineral, labour, and machinery costs. Other costs such as insurance or special program costs can also be included. Buying costs should include the cost of locating, purchasing and delivering calves to the lot. In the case of feeder calves born on the farm or calves bought FOB and delivered to the farm, buying costs may only include induction costs into the lot.

Selling costs are a bit more complex to calculate. In **Table 1**, the projected sale price of (\$1.75/lb.) is the producer's estimate for sale day. If the sale price does not reflect shrink, commission, check offs, transportation, transit insurance, and brand inspection, these factors should be deducted as selling costs. In this example, they add up to \$100.75/ head. **Table 3** includes a list of selling costs that should be considered in breakeven calculations. Some of these costs will vary between producers. Shrink is included as a deduction if the sale weight of the calf is the weight at the lot rather than the actual weight at time of sale. Transportation, handling, access to feed and water and other factors will affect shrink. If doubt exists about any of these costs, it is a good idea to estimate them on the high side.

Table 1. Example Feeder Cattle Breakeven Worksheet

Calf Value (500 lbs. live weight x \$1.90/lb.)	\$950.00
Projected Sale Value (800 lbs. sale weight x \$1.75/lb.)	\$1,400.00
Feed Costs (\$/day)	
Hay (12 lbs. x \$0.05/lb.)	0.60
Rolled Barley (5 lbs. / day x \$0.11/lb.)	0.55
Supplement (includes Elanco Rumensin®)	0.11
Total Daily Feed Cost (\$/head/day)	\$1.26
Total Feed Costs for 150 days (\$/head)	\$189.00
Other Costs (\$/head)	
Profit and risk margin	\$5.00
Veterinary, medicine and induction costs	\$28.18
Yardage (\$0.50.day x 150 days)	\$75.00
Death Loss (2% x (Calf Value + 50% x total feed cost))	\$20.89
Interest on feeder ((4% x \$950.00/feeder x 150) ÷ 365 days)	\$15.62
Interest on feed ((4% x feed costs x 0.5 x 150) ÷ 365 days)	\$1.55
Buying costs (hiring the order buyer)	\$10.00
Selling Cost (\$/head)	
Shrink (5% x \$1,400.00/head)	\$70.00
Auction commission charge	\$20.00
Trucking from farm to auction	\$3.00
Alberta Beef Producers Check-Off	\$4.50
Brand Inspection	\$1.25
Transit Insurance	\$2.00
<i>Total Selling Costs</i>	<i>\$100.75</i>
Total Other Costs (includes selling costs)	\$256.99
Total Production Costs (feed and other)	\$345.24
Total Costs (calf, feed and other)	\$1,395.99
Net Profit = Projected Sale Value - Total Cost	\$4.01
Cost / lb. of gain =	
Total Production Costs ÷ 300 lbs.	\$1.15/lb. of gain
Breakeven Purchase Price =	
(Projected Sales Value - Production Costs) ÷ 500lbs. Feeder live weight	\$2.11/lb. live weight
Breakeven Sales Price =	
Total Cost/Head ÷ 800 lb. sale weight	\$1.74/lb. live weight

Profit versus Prices

After production and selling costs are totaled, the results can be used in a variety of ways. One of the most important figures is net profit per head, seen as \$4.01 in Table 1. This value is dependent on the accuracy of both the purchase price and the estimated sale price. The \$4.01/head profit shown is over and above the \$5/head profit and risk margin in the calculations.

If the profit was \$0/head, you would still have the \$5 built in, but it would indicate a breakeven situation from a business point of view. A negative \$5 net profit would be the true breakeven, while a larger negative net profit would indicate a loss.

The breakeven sale price is the best estimate of the minimum price required to meet all costs of producing the sale animal. It is the total cost of production divided by the sale weight of the animal. This estimate is dependent on the accuracy of estimates of both expenses incurred and the purchase price of the calf. The breakeven sale price can be compared with available outlook information to judge the probability of making a profit.

The breakeven purchase price can be used to decide whether or not the purchase price of feeder calves is low enough to make a profit. The maximum price that can be paid for a feeder calf can be estimated by subtracting feed and production costs from the projected sale price. In **Table 1**, the 500 lb. calf could be bought for \$2.11/lb. without a loss. However, at this price there is no additional profit over the \$5 included as a profit in the risk margin and this does not consider selling costs.

Profit and Sensitivity

Sensitivity analysis is a process to determine how sensitive the breakeven analysis is to a change in one of the variables such as death loss or feed prices. In this example, sensitivity analysis measures how net profit per head will change if the selling price, buying price or one of the input prices change. Sensitivity analysis for this example breakeven analysis is shown in **Table 2**. This kind of analysis is useful to determine which input to alter to obtain a maximum return. The cost of the improvement (in dollars per head) can be easily judged using the sensitivity analysis and the impact on breakevens. For example, if the interest rate went up or down by 1 percent, the cost of interest on the feeder and on feed would change, resulting in a change of net profit per head of \$4.29. Therefore, a one percent increase in the interest rate would reduce net profit by \$4.29/head. Similarly, if the barley price increased by 5 percent, net profit per head would decrease by \$4.20.

Table 2. Sensitivity Analysis of Feeder Budget in Table 1

Variable	Change in Input (Increase/decrease)	Change in Net Profit/Head
Death Loss	1%	\$10.44
Interest Rate	1%	\$4.29
Yardage Expense	\$0.02/day	\$3.00
Barley Price	5%	\$4.20
Hay Price	5%	\$4.58
Purchase Price	\$0.01/lb.	\$5.18
Sale Price	\$0.01/lb.	\$7.60
Shrink at Sale	1%	\$14.00

Another consideration in sensitivity analysis is purchase price. If the purchase price increases by

\$0.01/lb., the breakeven sale price will increase from \$1.74/lb. to \$1.75/lb. and net profit will decrease by \$5.18/head. Similarly, if the selling price changes, then the breakeven purchase price and net profits will change.

The high sensitivity of the sale price emphasizes the importance of knowing the market trends and accessing outlook information. For example, if feeder cattle were purchased with the expectation of receiving a sale price of \$1.75/lb. and the market dropped to \$1.65/lb., sale value would be reduced by \$80/head. By following the market and having reasonable price expectations, producers will have a better idea of how price changes will affect their returns.

Some sources of market information available from Alberta Agriculture, Food and Rural Development are:

- [Call of the Land](#) - Alberta Agriculture Livestock Market Summary
- The Chicago Mercantile Exchange website provides futures prices for [feeder cattle](#) and [live cattle](#).
- The Alberta Beef Producers' "[Daily Cattle Report](#)" provides Alberta fed and feeder cattle prices and relevant market commentary.

To learn how to use CME cattle futures prices to predict feeder prices see another module in this series: Predicting Feeder Cattle Prices.

By using realistic estimations of costs and livestock prices, breakeven analysis can be a powerful tool for planning farm production and estimating future income.

Comparing the Alternatives

Deciding when to sell a calf can be difficult. The decision to sell calves at weaning, or to background them to a heavier weight or to finish them for slaughter depends on the objective of the producer. The requirements of a long feeding period, such as the need for additional feed, labour and facilities, must be assessed for each alternative. Breakeven analysis can be a useful tool to help in deciding when to sell calves.

To compare alternatives, all returns must be converted to a common base, in this case today's value at the farm gate (See: [Farm Gate Value for Farm-Raised vs Purchased Calves](#)). To illustrate, consider a cow-calf producer with a pen of 500 lb. weanling steers. The rancher must choose between selling the calves at weaning, backgrounding to a heavier weight, or finishing the calves to slaughter. For simplicity in this example, other options such as custom feeding or the live export market will not be considered.

To determine the value of a calf at weaning the producer calculates net income by deducting the estimated selling costs from the calf's estimated value shown in **Table 3** below.

Table 3. Net Income Estimate

Income	
Estimated Calf Value (500lbs. X \$1.90lb.)	\$950.00
Selling Costs	
Shrink (5%)	\$47.50
Auction commission charge	\$20.00
Trucking from farm to auction	\$3.00
Alberta Beef Producers Check-Off	\$4.50
Brand Inspection	\$1.25
Transit Insurance	\$2.00
Total Selling Costs	\$78.25
Net Income	\$871.75

By the producer's best estimate, that calf is worth \$871.75 today. This farm gate value is a basic indicator that can be used to compare marketing alternatives. Now a series of breakeven calculations can be used to evaluate the opportunities of feeding calves to heavier weights.

Using the worksheet in **Table 1**, the best projection of the market price for 800 lb. steers 150 days in the future is \$1.75 per pound, yielding a net profit of \$4.01/head. Because the breakeven worksheet includes trucking, selling costs and other expenses for the planned point of sale, this profit is already a farm gate value.

Comparing the additional profit and loss to the present selling value of the weaned calf will give an indication of the potential profit or loss from feeding the calf to a heavier weight. This assumes the producer is feeding calves from his/her own herd. If the producer is purchasing calves, he/she would use the purchase price of the 500 lb. calves as a base.

After calculating several different breakeven values for the calves, the producer can compare the different alternatives shown in **Table 4**. This is an example only and may not be indicative of current market conditions.

Table 4. Potential calf feeding alternatives past weaning

Alternative	Potential returns or loss
Sale at 800 lbs.	\$4.01/head
Sale at 900 lbs.	-\$2.58/head
Sale at finish	-\$6.57/head

In this case the producer would consider backgrounding the calves to 800 lb. as potentially the most profitable of these alternatives. This decision would be tempered with practical considerations such as availability of feed, facilities, time, interest rates and labour.

Putting It All Together

Several things must be considered when buying and selling feeder cattle. Even in marginal breakeven situations calves may be purchased to make use of existing facilities or labour, or for other reasons. These considerations can be included in the breakeven analysis to adapt the results to an individual farm situation. By using realistic estimations of costs and livestock prices, breakeven analysis can be a powerful tool for planning farm production and estimating future income.

Figure 5. Sample Feeder Cattle Worksheet

Calf Value (weight x \$/lb.)	\$
Projected Sale Value (weight x \$/lb.)	\$
Feed Costs (\$/day)	
Hay	\$/day
Grain	\$/day
Silage	\$/day
Supplement	\$/day
Total Daily Feed Cost	\$/day
Total Feed Costs	\$/head
Other Costs	
Profit and risk margin	\$/head
Veterinary, medicine and induction costs	\$/head
Yardage (\$/day x days on feed)	\$/head
Death Loss (% x (Calf Value + (50% x total feed cost)))	\$/head
Interest on feeder (% x calf value x days on feed ÷ 365 days)	\$/head
Buying costs	\$/head
Selling costs	\$/head
Total Other Costs (includes selling costs)	\$/head
Total Production Costs (feed and other)	\$/head
Total Costs (calf, feed and other)	\$/head
Net Profit = Projected Sale Value - Total Cost	\$/head
Cost / lb. of gain =	
Total Production Costs ÷ lbs. gained	\$/lb. of gain
Breakeven Purchase Price =	
(Projected Sales Value - Production Costs) ÷ Feeder live weight	\$/lb. live weight
Breakeven Sales Price =	
Total Cost/Head ÷ sale weight	\$/lb. live weight

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