



Beef Cattle Handbook



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Retained Ownership: Method of Analysis

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This fact sheet will discuss a method that can be used to evaluate the profitability of a retained ownership program.

A partial budget is used to evaluate profitability. The partial budget contains four main sections: 1) Additional Revenue, 2) Lost Revenue, 3) Additional Costs, and 4) Net Revenue (Figure 1). Each of these sections will be discussed in detail in the following sections.

Additional Revenue

This section contains the revenue amounts expected at

Figure 1. A Partial Budget

Additional Revenue	\$\$\$\$
minus Lost Revenue	\$\$\$
minus Additional Costs	\$\$\$
Net Revenue	\$\$

the end of the retained ownership program. Revenue is obtained by multiplying the expected weight by the expected price. This sounds easy enough, but coming up with the correct weight and price can be difficult.

The following equation can be used to predict final weight:

$$\text{Final Weight} = \text{Initial Weight} + (\text{ADG} \times \text{Days Fed})$$

Initial weight of the calves should be known with certainty if the calves have been run across a scale, or estimated based on past weights. Average daily gain will vary considerably based on the retained ownership program.

Estimation of gains are probably more reliable for drylot and background programs. Calves are not pushed as hard under these programs and reaching a desired rate of gain is simply a matter of meeting the animal's nutritional requirements. Gains can be quite unpredictable for grass and wheat pasture programs. The quality of the forage varies tremendously from one area to another and from one year to the next. When calves are weaned and go directly to the feedlot and onto a finishing ration, the gains can also be hard to predict. Calves with the genetic potential may have average daily gains (ADG) of 4 lbs. or more, while other calves may not exceed 2.5 lbs. ADG. Research has shown that the same cattle on the same type of program have a very repeatable performance. So, past history, if available, is probably the best estimate for gain.

The number of days on feed may be based on the cattle reaching a desired weight, or might be based more on the market reaching a desired position. Either way, once the ADG and the days on feed are estimated, a final weight can be predicted.

Once final weight is estimated, selling price must be estimated. When estimating selling price the weight of the animal needs to be considered, particularly if the animal is to be sold as a feeder animal. Another important consideration is the seasonal price variation of fats and feeders. The seasonal patterns for feeder cattle vary somewhat from area to area and should be considered. The futures price for Live Cattle or Feeder Cattle could be used as an estimate for the expected price, but remember to adjust for the local basis.

Lost Revenue

Lost revenue is the revenue that could have been earned by selling the calves rather than retaining ownership. It is not the cost of raising the calves. To calculate lost revenue, take the weight of the calves entering the retained ownership program and multiply by the market price. Keep in mind that the market price is what you could sell them for, not what you think they are worth.

Additional Costs

Feed, yardage, veterinary and medical, interest, death loss, labor, and freight are costs that will often be incurred. Estimates of feed cost may be obtained from the custom feeder if calves are sent to a custom lot. If calves are retained on the ranch, then the current market value for the feed should be used. If the feed is of lesser quality, then the price should reflect this. An estimate of yardage can also be obtained from the custom feeder. For some feeders, feed and yardage costs may not be separated but simply given as a total cost. If calves are retained on the ranch, yardage costs should contain a prorated cost for fence and lot repair and upkeep. Projected costs of vaccinations, growth promoters, antibiotics, and fly control make up veterinary costs.

Interest should be charged on the initial calf value. If calves were sold, that money could be put in the bank to payoff operating loans or earn interest in savings. The interest rate used should reflect where the money is going. In other words, if you would pay off a note with a 10 percent interest rate then use 10 percent, but if the money would go into a savings account at a 6 percent rate then use 6 percent. Interest should be charged as long as the calves are retained. Interest on feed and other operating expenses should also be considered. Frequently, in preparing a budget, interest on these items is only calculated at half of their value to reflect the fact that they occur throughout the feeding program.

Death loss is a fact of life in retained ownership. Generally, you won't have as many calves to sell at the end of the program as when you began. There are two ways to account for death loss: 1) If the partial budget is done on a total dollars, rather than a per head basis, you can adjust the additional revenue by the number of head expected to die, or 2) If the partial budget is on a per head basis, multiply the additional revenue per head by the estimated percentage death loss and show this as a cost.

Labor from a custom feeder will generally be included in the yardage charge. If calves are retained on the ranch and additional labor is hired to take care of them, this should be charged to the retained ownership program. If you are supplying your own labor, you may not want to charge for that labor. In this case, net profit will represent a return to the owner's labor and management.

Freight should be charged on the calves if they are sent to a custom feedlot. If they are retained on the ranch there may not be a freight charge.

Once all of these costs, plus any other costs peculiar to the particular program are included, net revenue can be determined.

Net Revenue

The net revenue or loss from the retained ownership program is obtained by subtracting the lost revenue and the total additional costs from the additional revenue. Other measures of costs and profitability can also be computed. These can be compared for different retained ownership programs.

Feed costs per pound of gain and the total costs per pound of gain are calculated by dividing feed costs or total costs by the pounds of gain in the program. The cheapest ration may not be the cheapest way to feed cattle when differences in gain are considered.

Return on investment is another way of comparing the profitability of alternative retained ownership programs. This measure takes into account the number of days on feed for different programs. Return on investment is calculated by this formula:

$$\text{Return on Investment} = \frac{\text{Net Revenue} + \text{Interest Cost} * (365/\text{Days Fed})}{\text{Initial Calf Value}}$$

Interest is added back into the net revenue when calculating return on investment. If the calves are retained on your own farm or ranch, then a charge for your labor and management should be subtracted from net revenue to calculate return on investment.

While it is not a measure of profitability, the break-even selling price is often calculated to determine the risk involved in the program. If the break-even selling price is considerably below your expected selling price, the program would be less risky than if the break-even selling price was at or above your expected selling price. The break-even selling price is calculated by this formula:

$$\text{Break-even Selling Price (\$/cwt.)} = \frac{\text{Lost Revenue} + \text{Total Additional Costs} * 100}{\text{Final Weight}}$$

Example 1

Steer calves are backgrounded for 100 days on the farm or ranch to utilize existing corn silage and alfalfa-grass hay. The calves start at 550 lbs. and a 2 lbs./day gain is projected. The selling weight is expected to be 750 lbs.

On October 15, the January Feeder Cattle Futures are at \$84.50/cwt. The local market typically has a \$1.50/cwt. positive basis in January, so the expected selling price is \$86.00/cwt. Additional revenue is \$645/head (Table 1).

The calves could have been sold to an order buyer for \$98/cwt. The lost revenue is \$539/head (Table 1).

The calves are fed 32 lbs. of silage and 7 lbs. of hay per day. The silage was valued at \$25/ton and the hay was valued at \$75/ton so the total ration cost per head is \$66. Maintenance of the feedlot is expected to cost \$5/head and the vet/medicine cost is expected to be \$6/head.

The farmer has an operating note at 10.2 percent so

uses this rate. The interest cost on the calf value is \$15/head. Death loss is estimated to be 1.7 percent so the cost is estimated at \$11/head.

Total additional costs are \$103/head, and net revenue from the backgrounding enterprise is \$3/head. Since no labor was charged, this represents the return to the owners labor and management. That may not look like a very attractive return, but remember in feeding the steers the corn silage and hay were effectively sold for \$25/ton and \$75/ton.

The feed cost of gain was projected at \$.33/lb. and the total cost of gain was \$.52/lb. The calculated return on investment is 12.2 percent.

The break-even selling price is expected to be \$85.60/cwt., just slightly below the expected selling price.

Table 1. A Partial Budget for an On-Farm Backgrounding Program.

	Per head
Additional Revenue	
750 lbs. X \$.86/lb.	\$645
Less	
Lost Revenue	
550 lbs. X \$.98/lb.	\$539
Feeding Margin	\$106
Less	
Additional Costs	
Feed	\$66
Yardage	5
Vet/Medicine	6
Interest	
\$539*.102*100/365	15
Death Loss	
\$645*.017	11
Total	\$103
Net Revenue	\$3
Feed Costs per Pound of Gain	
\$66/200 lbs.	\$0.33
Total Costs per Pound of Gain	
\$103/200 lbs.	\$0.52

Return on Investment

$$\frac{\$3 + \$15}{\$539} * (365/100) * 100 = 12.2\%$$

Break-even Selling Price

$$\frac{\$539 + \$103}{750 \text{ lbs.}} * 100 = \$85.60/\text{cwt}$$

Example 2

Steer calves are retained in a custom feedlot on an accelerated finishing program. The calves start at 550 lbs. and a 3 lbs./day gain is projected over 192 days. The selling weight is expected to be 1126 lbs.

On October 15, April Live Cattle Futures are at \$76.00/cwt. The local market typically has a \$1.00/cwt. negative basis in April. So the expected selling price is \$75.00/cwt. Additional revenue is \$845/head (Table 2).

The calves could have been sold to an order buyer for \$98/cwt. The lost revenue is \$539/head (Table 2).

The feedlot has contracted to feed the cattle for \$.45/lb. of gain. This includes the cost for feed and yardage. At 526 lbs. of expected gain, that is a cost of \$237. Vet/medicine cost is expected to be \$8/head. Transportation to the feedlot will cost \$5/head for trucking.

Table 2. A Partial Budget for a Custom Feedlot Retained Ownership Program.

	Per head
Additional Revenue	
1126 lbs. X \$.75/lb.	\$845
Less	
Lost Revenue	
550 lbs. X \$.98/lb.	\$539
Feeding Margin	\$306
Less	
Additional Costs	
Feed & Yardage	\$237
Trucking	5
Vet/Medicine	8
Interest	
\$539*.102*192/365	29
Death Loss	
\$645*.015	13
Total	\$292
Net Revenue	\$14
Feed Costs per Pound of Gain	
\$237/526 lbs.	\$0.45
Total Costs per Pound of Gain	
\$292/526 lbs.	\$0.52

Return on Investment

$$\frac{\$14 + \$29}{1126 \text{ lbs.}} * (365/192) * 100 = 15.2\%$$

Break-even Selling Price

$$\frac{\$539 + \$292}{1126 \text{ lbs.}} * 100 = \$73.80/\text{cwt.}$$

The farmer has an operating note at 10.2 percent so uses this rate. Interest cost on the calf value is \$29/head. Death loss is estimated to be 1.5 percent so the cost is estimated at \$13/head.

Total additional costs are \$292/head, and net revenue from the retained ownership enterprise is \$14/head. This represents the return to the owner's investment in his own cattle.

Feed cost of gain (including yardage) will be \$.45/lb. since that is the agreement. Total cost of gain is projected at \$.52/lb. Calculated return on investment is 15.2 percent.

The break-even selling price is expected to be \$73.80/cwt., or \$1.20 below the expected selling price.

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