

Grassfed Beef Production Profit Projection and Closeout

You can't predict but you can prepare.

The purpose grassfed beef retained ownership beyond the cow-calf phase or purchased stockers spreadsheets is to summarize actual production and financial data using a common methodology to project profitability. The software reports performance information in a standardized format that facilitates benchmark comparative analysis and data use. One spreadsheet has live sales the other spreadsheet live sale can be compared to the carcass or meat sales net income and return on investment. The spreadsheets are very complementary to QuickBooks™ set up for a grassfed beef ranch (See Appendix C).

Grassfed cattle retained ownership is a margin business where added revenue must be greater than added cost to be profitable (see appendix A for definitions). Profitability is measured by the return on assets on investment (ROI) and return on equity (ROE). In order to make informed decisions producers need projection and closeout dates for their decision situation. Producers must develop their own performance and financial numbers and constantly monitor them to be successful. Any published “breakevens” are often based on incomplete cost and prices to make the information timely and relevant.

For the cow-calf producer the goal of retained ownership is to achieve higher business net income. At the time of weaning it's a question – given the **net payweight price** that can be received for the calf (**opportunity cost**). The **added net revenue** must be greater than the **added cost** associated with grassfed retained ownership including preconditioning, grazing to finish. The cost of producing the weaned calf at the time of weaning is irrelevant in the decision to retain ownership. The cost of raising the calf is a **sunk cost** and cannot be changed. Another consideration is retained ownership increases price and production risk and requires more operating capital especially with high calf prices and cost of gain. Specialized marketing of grassfed beef is a challenge as it's a niche market.

The purpose of these decision aids is to help facilitate the organization of retained ownership cattle price, costs and production data to project the potential production and key financial performance measures including return on investment (ROI) and ROE for retained ownership. “What if” analysis is facilitated by this spreadsheet based decision aid. There are six key **economic measures** calculated including:

1. Cost of stocker vs. grassfed beef sales live, carcass or meat.
2. Value of weight gain
3. Cost of gain – dominated by grazing cost
4. Marketing margin – buy versus sell margin on initial weight or roll back
5. Grazing margin – cost of gain versus sales price of gain
6. Return on Investment (ROI) and Return on Equity (ROE)
7. Maximum that can be paid for calf or stocker and achieve target net returns.

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The key data and **production** performance measures are:

1. Payweight average daily gain (ADG) – which also reflects net weight after shrink in and out of cattle.
2. Death and culling losses
3. Selling on a carcass basis requires dressing percentage and price information so the alternative to selling live grassfed cattle. Selling meat requires information on cutout percent and price and processing and selling costs.

Calculations are always based on payweight to payweight cattle prices, weights, death loss and average daily gain. Definitions follow on the terminology used in the decision aid.

Retained Ownership – is added return greater than added cost.

Because the calf or stocker in cost account for 60 to 80% of total unit cost (TUC) stocker in cost can be easily modified to show a “profit” on the actual closeout. Remember “**there is always a stocker price low enough to project a positive net income for retained ownership**”. Cattle owners must be responsible to estimate their “opportunity cost” not the cattle buyer or custom finishing lot. For preconditioned cattle it is essential to identify buyers or special sales that pay for the added cost including compliance with source verification. Seasonality of pricing and selling must be a consideration in short preconditioning retained ownership. It’s easy to retain into a declining market in the fall.

When producers have accurate complete TUC cost this **sunk cost can be compared** to net **market price** to evaluate if calves could be purchased at a lower cost than the total TUC. The business income statement reflects the same cost that would be used to arrive at sunk costs to calculate business profitability.

It is very common for ranchers to use “plugged cost” or estimated market value when projecting profitability of retained ownership or doing closeouts. Few know their TUC thus profit is only estimated. The plugged measured finishing profitability will be over or understated if the value differs from the actual stocker TUC. Its equivalent to having purchase cost as the base cost for stockers. Decision aid users are encouraged to evaluate retained ownership at each marketing alternative at both net market and TUC.

In projections, it’s good to establish your target net return, change the interest rate, and determine what sale price is necessary to cover total costs to justify taking on the additional risks. It is good to consider at least three levels of possible outcome (pessimistic, likely, and optimistic prices). Calculate what the target net return to risk (profit) and equity capital will be for each price situation. Always remember you achieve nothing by attaining breakevens that only include the direct cost of production. Closeout reflect what truly happened and can be guides to future projections.

Input Data

Retained ownership closeout are a good source of production data if backed by financial data generated from QuickBooks™ set up by using the class feature to generate the necessary accounting data or an alternative accounting system. Note the financial data names can be set up in the chart of accounts and each lot can be a separate class in QuickBooks™. The spreadsheet can be uses record inventory and weight data. Key information needed is as follows:

- (1) Payweight of weaned calf, stocker cattle
- (2) Payweight purchase cost of cattle – included freight in
- (3) Net payweight when marketed
- (4) Payweight gain
- (5) Full cost of gain – all cost including direct, indirect and interest cost
- (6) Payweight net sales price – price minus freight and other marketing cost
- (7) Number of head sold net of death loss
- (8) Head days grazed or fed for the lot being evaluated.
- (9) The grazing and or feed fed by lot.
- (10) Accounting cost and revenue data.
- (11) Enter data that converts carcass and meat sales data the three marketing alternatives.

Accurate cattle inventory and feed fed or land grazed data is essential for accurate production performance information that is useful to evaluate the production and marketing system performance. Information on performance can be used to improve future decision making and help prevent repeating errors.

Operation of the Projection Spreadsheet

All data is entered in cells in **blue** are unprotected and should have values or a zero. **The example is only for illustration purpose.** It is advisable to save the blank version and start each new lot in the blank. Add notes as this helps check back on the basis for the projection.

Note: *When saving lot data each lot needs a unique file name and is saved by using the “save as” command. It is useful to **identify files by lot and date** of data entry.*

Reports

The three factors that determine profitability of retained ownership are: 1. The cost of the calf or stocker retained and 2. Cost of gain (COG) to grass finishing the cattle and 3. Of course the **net sales value**. Projections starts with the **opportunity cost of stockers in and net sales price or income out**. This is quickly evaluated by calculation the value of gain. In closeouts it’s “what happened”. In cost plus **pricing projections** be realistic about TUC and price. **You can’t predict but you can prepare.** Volatile costs make cost plus pricing difficult because costs need to be updated frequently.

When measuring closeouts, profit value of gain versus (COG) cost of gain is a good measure to review. Value of gain must be greater than COG for the activity to be profitable.

Value of Gain = ((Total Revenue -Total Cattle In Cost)/Net Gain

Value of Gain is what can be paid for gain and should be compared to total cost of gain.

Cost of Gain (COG) is the total cost for the retained ownership minus the total initial cost the stocker divided by net gain. Costs must be carefully monitored (see notes on cost below). Gain is payweight sales minus payweight of the initial stocker payweight.

In the final analysis return on investment (ROI) is the most useful profitability measure once net income, after indirect costs, is calculated. **Make the numbers do the talking!**

An area of information not communally observed is closeout performance evaluation of where the margins are earned and stresses the importance of marketing when retaining cattle ownership. These margins are defined as follows:

Marketing margin is the net payweight sales for the weaned calf or purchase payweight of the stocker or stocker based on sales and inventory adjustments times buy/sell margin or the rollback or roll-up (positive or negative margins between cost of buying and selling price). For a negative marketing margin, the cost of gain has to be less than its market price (sales price) to have a positive net income.

Grazing margin is the sales price minus the cost of gain times the net payweight gain. It is a measure of how much the value of gain exceeds the cost of gain. Under normal buy-sell prices, there is a negative marketing margin. The grazing margin must offset this negative margin for the enterprise to generate a positive net income. To generate a profit, the marketing margin plus the Grazing margin must be positive. For grassfed cattle require a large focus on the grazing production and management system and qualification for specialized grassfed markets.

The most important product of the cattle cost accounting system is the cost of gain as it measures both efficiency and competitiveness of the grazing enterprise. The sum of marketing margin and grazing margin is profit per head.

Annualized Net Return on Investment (ROI) is the annualized or the net income plus cash interest cost divided by annualized capital requirement to support the enterprise. Capital is adjusted for the time cattle are fed.

Reviewing Results

After all data and results are corrected look over the graphs and review results. Note in the pie chart the initial cost of the retained ownership is in the range of 60 to 80% of total costs. It's very important to avoid buying a losing lot of retained ownerships. These points out the importance of retained ownership cost relative to other costs. Then review margins. Is the grazing margin sufficient to offset the marketing margin? The ROI is the most important measure of financial performance. If target returns cannot be achieved then alternatives need to be considered. There are grazing lease alternatives, alternative weight of cattle, marketing alternatives and seasonality of prices to consider.

Disclaimer

The results and uses of the decision aid are the sole responsibility of the user.

Breaking even is financial failure as a business is not financially sustainable if net price merely covers costs particularly to incomplete costs often reported in the cattle sector.

Retained Ownership Definitions

Annualized Net Return on assets or investment is the annualized return on assets

(ROI) is the net income plus cash interest paid divided by annualized capital investment requirement to support the cattle grazing activity. The reason interest is added back is interest paid represents a return the debt capital. ROI is a return to capital invested irrespective of capital ownership. Capital is adjusted for the time cattle are on feed. Investment required is estimated by taking one half of the investment is non-cattle costs plus the total payweight cost of the stocker cattle times days on feed divided by 365 days. A low ROI is due to high stocker cost relative to sales value, high grazing costs of gain, poor production performance or a combination of these factors.

Annualized Net Return on Equity (ROE) is net income after all costs including interest paid

Divided by the portion of the investment as defined for the ROI that is an equity investment. The higher the ROE more profitable the business is. The portion of equity relative to total investment is referred to as leverage. If ROE is greater than interest cost, using debt is profitable. The opposite is true if ROE is less than cost of capital. Leverage investment thus does increase risk and should be addressed when considering retained ownership feeding.

Average Daily Gain (ADG) is the net payweight weight gain divided by head days. This weight is adjusted for death loss (deads are in) as only live cattle payweight are counted. Average daily gain is total saleable net gain divided by head days fed.

Total Unit Cost (TUC) is a substitute for the often used breakeven cost or a cost component divided by the amount of saleable product. The costs included **must be defined** before a breakeven can provide useful information to a decision maker. **A break-even that does not cover full cost is misleading.** Producers must use closeout information and add the full payweight cost of the stocker and the cattle owner's business's indirect and general and administrative (G & A) costs including management cost. They must have **total unit cost (TUC)** to have a true measure of profitability. Having indirect and actual interest cost will mean the cattle retained ownership activity profitability is consistent with the business income or profit and loss (P&L) statement.

Direct Costs are expense items that are directly related to production activity such as grazing, health and stocker cost. All retained ownership costs in feedyards are direct costs.

Death or Culls or Out of Program Losses are reported together as neither result in cattle sales.

Cattle Owner Management cost or compensation should be included in the indirect production cost calculation at the manager's salary lever or a level equivalent to the salary required hiring a non-family member to provide an equivalent service. Cattle owner's management costs need to be included in costs as compensation for grazing and marketing decisions.

Economic Cost is in addition to the financial or accounting cost, an opportunity cost that is charged for equity capital (what it would earn in an alternative investment or by how much it would reduce interest if used to repay debt). Opportunity cost represents the return that could be received for a resource in its next best use. Economic cost represents the cost "if all resources" earned their opportunity cost or a use forgone.

Stocker Price That Could Be Paid – in the closeout this is a calculation that with the results of sales revenue and costs what could have been paid for the stocker going in to the production and marketing activity and total unit costs (TUC) be covered. This can then be compared to actual cost of the stocker to calculate over or under payment for the stocker.

Financial Analysis focuses on determining the accounting cost (cash and non-cash), profitability or change in equity, and repayment capacity of the enterprise or business being evaluated.

Financial Costs include cash costs, depreciation, and non-cash adjustments, such as accounts payable, accrued interest, etc. These costs are recorded and reported in the business accounting system. The financial cost **does not** include opportunity cost of resources like lease equivalent or owned land and interest on equity capital.

Freight Shrink is the extra shrink calves suffer when they travel long distances. The time and feed required to recover will reduce performance and increase cost. This should be a factor of consideration in reviewing and comparing close outs.

Freight or Trucking Costs are a marketing cost and reduce the gross revenue or the net payweight price received for cattle. They should not be included as a cost of gain.

Grazing Margin is the net stocker sales price minus the total cost of gain times the net payweight gain. This is a measure of cost of gain versus the sales value of finished cattle.

Indirect Costs is necessary to include to insure production activity costs match up with the P&L. This includes ownership and operating costs. Depreciation, repair, maintenance of improvements vehicles, machinery and equipment, labor and management, and property tax are examples of indirect costs. Indirect costs continue as the number of cattle increase or decrease. **General and Administrative Costs (G&A)** are included in indirect costs to run the business such as bookkeeping, professional fees for accounting and legal services, dues, utilities, general insurance, office supplies and administrative personnel salary, and payroll and benefits. There is management time spent on planning, implementation and marketing issues for the cattle custom Grazing retained ownership activity. Indirect cost are also referred to as overhead costs or fixed cost.

Payweight Price is the net income from sale after adjustments for freight and marketing costs. Payweight is the net weight after shrinkage for the cattle.

Marketing Margin is the initial stocker payweight times the roll back or roll up in price or the positive or negative margin between initial stocker price and the finished cattle sales price.

Net Payweight Gain is the difference between net sales or payweight and weaning weight.

Net Income or Margin is the difference between the value of the net sales and the original stocker value and added cost for production, G&A and financing cost. If these costs are included this is **total cost or total unit cost** per head of per cwt. of cattle marketed. The net margin is made up of two components, marketing margin and grazing margin.

Net Payweight Sales Revenue is the revenue received per Cwt after shrink and all freight and marketing costs are accounted for.

Payweight In is the net beginning payweight weight. Off truck weight at arrival at the feedyard Is irrelevant in cattle Grazing production and economic performance analysis. As its payweight that counts in the end.

Payweight Out is the net weight out after shrinkage (deads are in). In other words, it is net-to-net payweight. Feedyard performance with deads out is wrong and just distorts reality.

Profit (Loss) care must be exercised in reading reports in the cattle sector labeling the value profit or loss. Most frequently in feedyard and other cattle reporting, these numbers are gross margins (gross revenue minus direct feedyard costs) and do not include overhead and owner labor and management costs, which are required to calculate a **true profit or change in business equity**. Reports are inconsistency is how interest costs are included.

Rate of Return on Investment (ROI) This ratio gives an indication of how productively the assets are being utilized. A low return on investment could indicate inefficiencies in the use of assets; low net income due high cattle cost, high feed costs, poor production performance or low finished cattle sales price or a combination of these factors. See annualized net return on investment above.

Roll Back is a term to describe the difference between the net payweight price of grass finished cattle and their payweight stocker purchase price or cost. This is the cost per cwt. weight on the beginning weight that has to be overcome by cost of gain to make a profit.

Sunk Cost – is used to describe a cost that has incurred or has taken place that cannot be reversed. At the weaning time the costs to produce the calf are sunk costs. These costs do not determine if the weaned calves should be retained or not. It's a question will the added revenue be greater than the added costs from retained ownership in greater than just selling the unweaned calf.

Total Unrealized Sales Value (opportunity cost) is the net sales revenue that is projected if the calves are sold at weaning after shrink and marketing costs. The weight, price and marketing costs are critical in determining net payweight and payweight price.

Calculations of Grazing Margins

To accurately calculate these margins for evaluation of growing and finishing alternatives, decision makers need the following data:

1. Payweight of weaned calf, stocker cattle
2. Payweight purchase cost of cattle
3. Net payweight when marketed
4. Payweight gain
5. Full cost of gain – all cost including overhead and interest cost
6. Payweight net sales price
7. Number of head sold net of death loss

The formulas for calculating margins are as follows: **

Marketing Margin (\$/Hd.) =

$$((\text{Total Purchase Payweight} * .01) * (\text{Sales Price} - \text{Purchase Cost})) / \text{Head Out}$$

Grazing Margin (\$/Hd.) =

$$((\text{Sales Price} - \text{Cost of Gain}) * \text{Net Gain} * .01) / \text{Head Out}$$

Net Income (\$/Hd) = Marketing Margin + Grazing Margin

** All prices and costs are in \$/Cwt. weights are in pounds, and margins are dollars per head out. Payweight to payweight accounts for death loss.

[Steve Boyles](#), Ohio State University Extension Beef Specialist notes better understanding of factors affecting shrink should help buyers and sellers of cattle to arrive at a fair pencil shrink under specific marketing conditions.

Types of Shrink: There are two types of shrink. The first is excretory which is the loss of urine and feces. Excretory shrink is the initial loss of belly fill. Much of this loss is replaced when cattle are again allowed to eat and drink. The second type is loss is tissue loss. It is the loss of fluid from the cells. Tissue loss is more critical. The proportion of shrink from urine, feces, and other sources varies depending on environmental conditions. When ambient temperatures are low (below freezing, urine and fecal output can comprise 30-35% of shrink. When temperatures are hot, urine and fecal losses account for about 15-20% of shrink. Therefore, actual tissue loss may account for a significant proportion of the total shrink that must be replaced during a subsequent Grazing period. Time and Distance-Rules of Thumb: A very important factor is time in transit. In many cases, three-fourths of the variation is due to time. This explains why truckers should deliver cattle as soon as possible. The following are some estimates.

Hours in moving Truck	% Shrink	Days required to Recover Payweight
1	2	0
2-8	4-6	4-8
8-16	6-8	8-16
16-24	8-10	16-24
24-32	10-12	24-30

Distance is included as a factor because some people think in terms of distance rather than time. One estimate is a 3% shrink for the first 100 miles.

Appendix C: Source of other beef cattle Spreadsheet Software:

Texas A&M University - Department of Agricultural Economics – Agri-Life Extension Beef Cattle Decision Aids

<http://agecoext.tamu.edu/resources/decisionaids/beef/>

Grassfed Beef Ranch QuickBooks™ Setup Accounts

Grassfed Beef Decision Aids

1. Grassfed Beef Profit Projection Live Sales
2. Grassfed Beef Profit Projection Live, Carcass or Meat Sales
3. Grassfed Beef Live or Carcass Closeout Performance
4. Grassfed Beef Meat Sales Closeout Performance