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Beef Feeding Profitability Tracker

Although feeding cattle requires considerable management and financial awareness, it is a popular enterprise. Most cattle feeders in Missouri background, finish or add weight to cull cows to increase the revenue of a cow-calf operation or to be involved in the cattle industry without owning a cow herd. Software that tracks inputs — feed, vaccines, livestock risk protection (LRP) insurance cost, management fees, buying price, death loss, and interest — can be expensive to purchase. University of Missouri Extension's Beef Feeding Profitability Tracker offers a no-cost solution for operators to track and improve their financial standing.

Market conditions and price changes can dramatically change the profitability of feeding or grazing cattle. It is important to have an appropriate risk management strategy in place before making the decision to purchase or retain cattle. For a concise overview of current market conditions in Missouri with data collected by the Missouri Department of Agriculture, visit MU Extension's Missouri livestock market watch hub (extension.missouri.edu/programs/agricultural-business-and-policy-extension/missouri-livestock-market-watch). Livestock risk protection (extension.missouri.edu/publications/g459) and livestock gross margin (extension.missouri.edu/publications/g461) insurance are two products that can serve as components of your risk management plan.

Application for various cattle operations

Cow-calf operators

Cow-calf operators might only sell their calves once or twice a year. To spread out cash inflows and add value to the calf crop, operators can precondition cattle for 45 to 90 days. This period will help calves adjust to living independently and gain additional weight, which could increase their value in the eyes of the buyer. The Beef Feeding Profitability Tracker helps cow-calf operators determine their return on investment (ROI) for weaning a specific calf for a specified number of days.

Before using the tool, cow-calf producers should identify the approximate value of their calves at weaning. The value at weaning can be entered as the purchase value so an accurate return to preconditioning can be evaluated. Missouri Department of Agriculture weekly market summaries (agmarketnews.mo.gov/summaries) can provide an estimated price the calves would have brought at the time of weaning in your local area.

When the calves are sold, the cow-calf operator can determine in the financial analysis section how profitable preconditioning the home-raised calves was and what the ROI was.

Feeding purchased cattle

To make successful business decisions, operations must make strategic choices to have positive ROI and know their break-even price. When feeding purchased cattle, profitability starts when the animals are bought. Overpaying can leave too little margin to pay for the expenses incurred while feeding the cattle. Rather than identifying the cattle you want and paying any price for them, work backwards from the expected value of the cattle when they are sold off your operation. Subtract estimated expenses from sale revenue to identify the maximum amount you can pay for cattle. Not feeding cattle is more profitable than feeding cattle that were bought for more than break-even price.

Buying cattle to add weight and resell or to finish and send to slaughter are both supported by this tool. Additionally, producers adding weight to thin cull cows and bulls can use this tool to analyze the profitability and efficiency of their operation.

Printable record sheet

The Beef Feeding Profitability Tracker contains a printable record sheet for use when cattle are initially processed. The sheet can be printed so the operator can write in the information for each animal — tag number, incoming weight, date bought, second weight, and treatment details — and later enter the information into the tool.

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When cattle require treatment, notes can be made on this sheet that help in future diagnosis and indicate whether the treatment was effective.

Financial analysis

In addition to typical profit-per-head analysis of enterprise profitability, other metrics can provide deeper, more-detailed insight into the health, feasibility and sustainability of the operation. Some additional metrics include average daily gain, break-even price, cost of gain, value of gain, and return on investment. Each of these business metrics is described below.

Average daily gain (ADG) is a measurement of the average daily body weight changes of an animal over a specified period. ADG is calculated by subtracting the initial weight from the final weight and dividing by the number of days between the weighing dates.

ADG = (final weight − initial weight) ÷ days fed

ADG example

Calf #83 weighed 385 pounds on Oct. 28. On Feb. 25 (120 days later), it weighed 568 pounds.
ADG = (568 pounds – 385 pounds) ÷ 120 days
ADG = 1.53 pounds per day

Break-even price is the minimum price that the animal must sell for, after commission is deducted, to cover all expenses. The break-even price of an animal will be lower for a heavier animal produced at the same cost as a lighter animal. A goal for an operation should be to minimize break-even price.

Cost of gain (COG) calculates the dollars spent to produce a pound of gain. Cost of gain and likelihood of profitability are inversely related. Fewer variable expenses and superior cattle performance (i.e., weight gain) influence this indicator positively. COG is calculated by dividing the animal expenses incurred by the weight gained.

COG = expenses ÷ weight gained

COG example

Calf #83 had $272 in variable costs (vaccine, LRP insurance, feed, interest, management fees, medicine) plus $60 in marketing costs. It gained 183 pounds in 120 days.
COG = ($272 + $60) ÷ 183 pounds.
COG = $1.82 per pound
Each pound the animal gained cost you $1.82.

Value of gain (VOG) examines what the market paid for each pound the animal gained since purchase. VOG is calculated by subtracting the value at the beginning (purchase price) from the value at the end (sale price) and dividing by the pounds gained. Note that the value of gain is not constant; it varies by animal sex, weight class, time of year, and demand for the animal.

VOG = (sale price − purchase price) ÷ pounds gained

VOG example

Calf #83 was purchased for $1,254 weighing 385 pounds. It was sold 120 days later at a weight of 568 pounds for $1,714.
VOG = ($1,714 − $1,254) ÷ 183 pounds
VOG = $2.52 per pound
The market paid you $2.52 for each pound the animal gained.

Profit per head is the amount of money that was returned to the operation on a per-head basis. When this number is positive, additional money was returned on top of the management fees. When the number is negative, the operation had a loss for each head sold. Profit per head can be calculated in two ways. The first is to subtract the total cost (purchase price plus fixed expenses) from the net sale (sale price minus sale costs).

Profit per head = net sale – total cost

Profit per head example 1

Calf #83 had a purchase price of $1,254 and $272 in expenses, for a total of $1,526. It had a gross sale price of $1,714 plus sale costs of $60, for a net sale of $1,654.
Profit per head = $1,654 − $1,526
Profit per head = $128

The other way to calculate profit per head is to subtract the COG from the VOG and multiply by weight gained.

Profit per head = (VOG – COG) × weight gained.

Profit per head example 2

Calf #83 had a VOG of $2.52 and a COG of $1.82. During the time it was owned, it gained 183 pounds.
Profit per head = ($2.52 − $1.82) × 183 pounds
Profit per head = $128

Return on investment (ROI) is a financial metric that is used to understand the profitability of an investment. ROI is calculated by dividing the net profit or loss by the cost of the investment and multiplying by 100. Because ROI is expressed as a percentage, you can compare the profitability of different investment types (e.g., cattle purchases, real estate, stocks).

ROI = net profit or loss ÷ cost of investment × 100

ROI example

Calf #83 had a net sale of $1,654 ($1,714 gross sale minus $60 sale expenses). The total cost (calf purchase price plus expenses) was $1,526.

ROI = ($1,654 – $1,526) ÷ $1,526 × 100

ROI = 8.38%

Using the metrics

Producers can use this tool to track different groups of cattle and their associated expenses. By reviewing the costs associated with raising the animals, the value of gain and the cost of gain, producers can see where costs can be more closely managed. Ultimately, you cannot manage what you do not know.

How to use the Beef Feeding Profitability Tracker

Download the Beef Feeding Profitability Tracker (XLSX) (extension.missouri.edu/media/wysiwyg/Extensiondata/Pro/AgBusinessPolicyExtension/Docs/beef-feeding-profitability-tracker.xlsx). Each worksheet contains one or more tables. You will enter your data in the gray-shaded table cells.

For better organization and to keep accurate records, use a new workbook each year so that costs can be updated without compromising previous years' records.

Feed worksheet

On the Feed worksheet, enter each feed ingredient, the date it was priced and the price on that date. To capture price fluctuations, update the prices quarterly.

When inputting feed costs on the Feed worksheet, keep the cost of production versus market value in mind for any feed stuffs raised on your operation. Always use the greater of production cost or market value. By entering costs in this way, the crop or hay operation is not losing money and subsidizing the cattle operation. Simply charge whichever is higher, the market value or the cost of production so that you have the true COG and do not give away your feed value. Then enter the dry matter percentage and any shrink associated with the ingredients.

Yardage calculator worksheet

In the Yardage Calculator worksheet, enter operation-specific details to figure the cost of yardage.

In the facilities and equipment section, it is crucial that you enter your operation's facilities and equipment and the respective costs. Yardage costs will vary depending on the style of the operation: Pasture-based, outdoor confinement, and indoor confinement operations have significantly different costs and total facilities investment.

Lot worksheets

Enter information about each lot on a separate Lot worksheet. Five blank Lot worksheets are provided, and an Example Lot worksheet is included for your reference when entering information. You can create a new lot worksheet, if needed, by right-clicking on any tab, selecting the worksheet to be copied, and then selecting "create a copy" and the OK button. Right-click on the new tab and select "rename" to change the lot number.

The Lot worksheets contains several tables, which can be quickly accessed using the navigation menu in the top left corner (Figure 1).

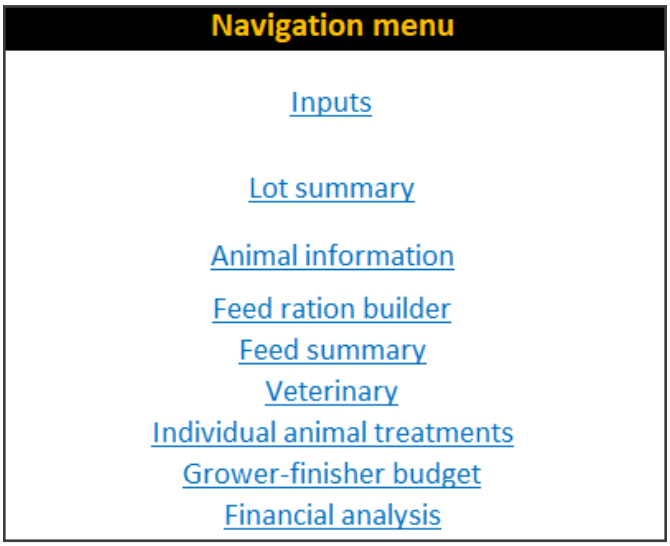

Figure 1. The navigation menu allows quick access to each table in the Lot worksheet.

Inputs

In the Inputs table, enter details about your operation's costs. The cull feeder price is what you received for any culls that you sold due to nonperformance. If the buyer's commission is included in the cost of the cattle, enter a zero. If price insurance is not used for a group, enter a zero; if it is used, enter the dollars-per-hundred-weight ($ per cwt) cost of insurance. If inbound and outbound transportation is paid separately and not included in the sale barn ticket, enter it here. Management fees is a return to the operation, expressed as a percentage of revenue.

Lot Summary									
Intake group	Date of purchase	Number of head	Sex	Start tag	End tag	Buy ticket weight	$/CWT	Total $	$/Head
1		-						$ -	-
2		-						$ -	-
3		-						$ -	-
4		-						$ -	-
5		-						$ -	-
6		-						$ -	-
7		-						$ -	-
8		-						$ -	-
9		-						$ -	-
10		-						$ -	-
Lot summary		0				-	$ -	$ -	$ -

Figure 2. Quickly enter cattle data using the Lot Summary table.

Lot summary

In the Lot Summary table (Figure 2 shows intake portion), enter relevant purchase and sale information. The buy ticket weight is the cattle's weight when purchased, and the dollars per hundredweight ($/cwt) in the next column is the price paid for the cattle. The sale ticket weight is the cattle's' weight when sold, and the following dollars-per-hundredweight ($/cwt) column is the price received upon sale.

Animal information

The information in the four weighing dates columns of the Animal Information Input table is automatically filled from the information entered in the Lot Summary table. If weights are taken during initial processing, enter them in the initial weight column. Enter each later weight and the date it was taken in the following columns. The average daily gain (ADG) is automatically calculated. If an animal dies or is culled, enter "DIED" or "CULLED" in the next weigh or the final weight column. If a final weight for the cattle was not recorded before leaving the farm, enter the weight as best you can based on the weights recorded at the sale barn or processor.

Feed ration builder

Use the feed ration builder to formulate each different ration the lot will be fed while on the farm and allocate the number of days each ration is fed. The Ration List on the left summarizes the cost of each ration and allows you to enter the number of days it is fed. The Ration Builder on the right pulls feed ingredients and prices from the Feed worksheet and allows you to customize up to five different rations for each lot of cattle.

Feed summary

The Feed Summary table breaks down the feed costs and ADG for the lot.

Veterinary

In the Veterinary table, enter the vaccines, drugs and veterinary products used and their cost per dose, dosing type and number of applications.

Individual animal treatments

For each treatment or vaccination, enter the animal tag number, reason for treatment, drug used and number of applications. The total expenses will be calculated and will automatically feed to the Animal Information Input table.

Grower-finisher budget

The Grower-Finisher Budget table (Figure 3) breaks down expenses on a per-head basis. This information is generated from data already entered.

Financial analysis

The Financial Analysis table (Figure 4) summarizes financial information for the lot. Your cost of gain, value of gain, profit per head and return on investment are found here.

Grower-Finisher Budget, per head			
Item	**Description**		
Income			
Outgoing calves	0 pounds at $0 per CWT	$0.00	
Chronic culls		-	
Death loss		-	
Marketing	0% of total sales	-	
		Total revenue	$ -
Expenses			
Purchased animal	0 pounds at $0 per pound		$0.00
Buyer's commission			$0.00
Feed			-
Vaccinations, tags, and implants	General treatments		$0.00
	Individual treatments		-
Risk management	LRP Policy		$0.00
Professional fees			-
Management fees	% of revenue		$0.00
Yardage			$0.00
Transportation	To and from site		$0.00
Operating interest			$0.00
		Total Expenses	**$0.00**
		Net income	**$0.00**

Figure 3. The Grower-Finisher Budget breaks down the average costs and revenue per head.

Financial Analysis	
Item	**Value**
Total gross margin	-
Gross margin per head	-
Gross margin per pound	$0.00
Breakeven price per pound	$0.00
Cost of gain per pound	$0.00
Value of gain per pound	$0.00
Total Revenue,	$0.00
Revenue per head	$0.00
Total Expenses	$0.00
Expenses per head	$0.00
Total net income	$0.00
Net income per head	$0.00
Return on investment	0%

Figure 4. Analyze your return on investment and financial performance with the Financial Analysis table.

If you have questions about the Beef Feeding Profitability Tracker or how to enter information, contact Rachel Hopkins at hopkinsrm@umsystem.edu.

For more helpful resources on raising beef in Missouri, visit the Beef Extension website (extension.missouri.edu/programs/beef-extension).

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