

Finishing Cattle That Have Been Limit Fed or Fed Ad Libitum at the Stocker Phase- Marketing Fed Cattle on the Grid

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Background

A research study was conducted at the Kansas State University Stocker Unit and Pratt Feeders to evaluate the impacts of limit feeding during the backgrounding phase and develop an economic framework to measure and quantify the sustainable attributes of limit feeding. At the stocker phase, four hundred eighteen calves were allotted to two treatments, one a 60NEg diet that was limit fed and a 45NEg diet that was fed ad libitum for 90 days. Limit fed calves had feed restricted to 85% of ad libitum calves feed intake. Cattle were then sent to Pratt Feeders where all cattle were finished on the same diet which was fed ad libitum. Throughout the trial, performance data and cost of gain was collected to build a producer budget sheet. Cattle were then harvested and evaluated on the rail. All variables from the study were utilized to construct a budget sheet that compares the cost at the feedlot sector when cattle are limit fed or fed ad libitum at the stocker phase. The budget sheet is built utilizing data received through the study, but also allows owner/operators to input costs and information relevant to their operation.

Budget Sheet Explanation

This spreadsheet is designed for feedlot operators to input values relevant to their operation in combination with values found during the trial to evaluate the per head income over total costs for calves fed ad libitum or limit fed at the stocker phase. This budget sheet is designed to be utilized by operators that market their fed cattle on a grid basis. Values in blue are designed to be changed by the producer to represent their operation. If these values are unknown for your operation, use the values in place as a default.

It is important to note that this budget sheet is designed as a comparison, assuming the same feeder animal is placed into each scenario. There are numerous factors that impact stocker cattle production with key factors being the diet fed, the rate at which it is fed, and the weight of cattle entering the feedlot. With that, data from previous studies comparing feeder cattle to fed cattle shows that as bodyweight at feedlot entry increased, finishing average daily gain, dry matter intake, and hot carcass weight increased, whereas gain to feed ratio and days on feed decreased (Rueter and Beck, 2013).

Production Efficiency Measures:

To begin, fill out death loss, average daily gain, and days on feed. The anticipated increase in average daily gain for the ad libitum fed calves is the value that was found through the research conducted at Pratt Feeders. If you choose to not account for the anticipated increase, this value can be set to zero. These values go into calculating the finished weight. Finished weight is then multiplied by the different dressing percentages that were found when cattle were harvested. The base price is a default value based upon the price received during the research trial, but should be updated by the user to provide a more accurate estimate. Premium/ discount on the grid was evaluated for stocker calves fed ad libitum

and stocker calves that were limit fed. Premiums and discounts were calculated on a 3-year annual average, but the seasonality tab allows producers to better account for the time of year when marketing fed cattle. Premiums and discounts are then multiplied by the percentage of cattle that received those premiums and discounts. The \$/cwt in premiums or discounts is then multiplied by the cwt per head. Purchase price is a default value based on a 3-year average 700-900 pound feeder steer price and should be updated by the user to reflect the current purchase price. This value is impacted when purchasing steers or heifers and time of year, so take those into consideration when selecting prices to utilize. The average weight of cattle purchased should be inserted into the purchase price quantity space.

Total Gross Returns:

Total gross return is then calculated by taking the base price received, adding or subtracting any premiums or discounts, subtracting purchase price and subtracting death loss. Differences between the two backgrounding options is captured through the anticipated increase in average daily gain which leads to a greater cwt produced for stocker calves fed ad libitum and the differences in how the cattle graded.

Variable Costs:

The next section looks at the variable costs. Prior to beginning this section, the feed tab should be updated to reflect the ration fed. Doing so will accurately account for the harvested forage, grain/ protein supplement, and mineral cost per head per day. Research at Pratt Feeders found an anticipated increase in cost of gain for limit fed calves, however this value may be zeroed out if preferred. If the operation has other feed costs those can be accounted for in the space provided. Labor represents the labor requirement for each animal during the feedlot phase. The wage for employees should be adjusted to fit the operation. Variable costs for vet medicine/ drugs, marketing costs, utilities, gas, fuel, oil, and machinery, facility/ equip repairs are all Kansas Farm Management Association (KFMA) values for the feedlot sector. These values may be used, or values for a specific operation may be inserted if available. Cash interest paid and other variable costs are also KFMA data for feedlot operations. Other variable costs are a rough sum of all other KFMA variables costs, including fees/ publications/ travel, conservation, building rent, and auto expenses. The sum of these previously mentioned values gives the total variable costs. The difference in variable costs is due to the anticipated increase in feed costs for limit fed stocker calves.

Fixed Costs:

Depreciation, taxes, and farm/ livestock insurance are all KFMA values. The opportunity cost of investment is a KFMA value that represents interest charge, it does not represent cash interest paid, rather a measure to reflect the interest that could have been earned had the investment been made elsewhere. It is important to note that the fixed costs are the same for both feeding methods.

Income Over Costs:

Finally, the income over variable costs and income over total costs is found at the bottom of the spreadsheet. The profitability of each feeding type can be compared and a producer may make adjustments and decisions as they see fit for their operation.

Producer Example:

Producer B finishes cattle for 145 days and has experienced a death loss of 1.5%. Cattle at this operation have an average daily gain of 3 pounds. Producer B is anticipating an increase in average daily gain of .2 when finishing calves that were fed ad libitum in the background phase. For limit fed stocker calves he observes the cwt produced is 4.350, and the cwt produced for ad libitum fed stocker calves is 4.640.

Producer B typically buys 800 pound steers in April, so he utilizes the 162.97 from the seasonality tab. After feeding cattle for 145 days, the limit fed stocker calves are expected to be 1,235 pounds and the ad libitum fed stocker calves are expected to be 1,264 pounds. After the different dressing percentages are accounted for. Hot carcass weights for limit fed calves is 807 lbs and 820 lbs for ad libitum fed calves. When utilizing the base price provided, ad libitum fed calves are worth \$1,583.83 and limit fed calves are worth \$1,559.18. Next, premiums and discounts are applied. Producer B elects to use the 3-year average for September, bringing the premium for limit fed calves to \$1.71/ cwt and the premium for ad libitum fed calves to \$3.37/ cwt. This leads to per head premiums of \$21.12 and \$45.12. After subtracting purchase price and death loss, the total gross return for finishing limit fed stocker calves and selling them on the grid is \$256.98. The total gross return for finishing ad libitum fed stocker calves and selling them on the grid is \$305.63.

When formulating rations, producer B feeds cattle a ration of 1.5 lbs/ day of prairie hay, 1.5 lbs/day of alfalfa, 17 lbs/ day of corn, 5 lbs/ day of DDGs, and .5 lbs/ day of salt and mineral. After feed for 145 days the feed costs per head are \$22.84 for harvested forage, \$234.04 for grain/ protein, and \$10.88 for salt and mineral. Producer B is anticipating the increased feed cost when finishing limit fed stocker calves, so he includes the additional \$6 per cwt. produced for a total of \$26.10. Producer B will not be using any other feed, so that line remains untouched. Producer B accounts for a labor wage of \$20 per hour. After 145 days and a .3 hour a month labor requirement per head, labor costs are \$30. Producer B opts to use the KFMA values for vet medicine/ drugs, marketing costs, utilities, gas, fuel, oil, and machinery, facility/ equip repairs. Additionally, producer B also decides to use the provided KFMA values for cash interest paid and other variable costs. After completing the variable cost section, when finishing ad libitum fed stocker cattle, \$371.75 in variable costs is observed and when finishing limit fed stocker cattle, \$397.85 in variable costs is observed.

Producer B decides to use the KFMA values for the fixed cost section, and does not have any other fixed costs. This brings the fixed costs for finishing limit fed or ad libitum fed stocker calves to \$56.50. Income over total costs for finishing limit fed stocker cattle comes out to be -\$197.37 and income over total costs for finishing ad libitum fed stocker cattle comes out to be -\$125.14. Producer B realizes an economic benefit of finishing cattle that have been fed ad libitum during the stocker phase and selling them on a grid basis.

Reference:

Reuter, R.R., & Beck, P.A. (2013). Carryover effects of stocker cattle systems on feedlot performance and carcass characteristics. *Journal of Animal Science*, 91(1), 508.