The Oklahoma Cooperative Extension Service
Bringing the University to You!

The Cooperative Extension Service is the largest, most successful informal educational organization in the world. It is a nationwide system funded and guided by a partnership of federal, state, and local governments that delivers information to help people help themselves through the land-grant university system.

Extension carries out programs in the broad categories of agriculture, natural resources and environment; family and consumer sciences; 4-H and other youth; and community resource development. Extension staff members live and work among the people they serve to help stimulate and educate Americans to plan ahead and cope with their problems.

Some characteristics of the Cooperative Extension system are:

- The federal, state, and local governments cooperatively share in its financial support and program direction.
- It is administered by the land-grant university as designated by the state legislature through an Extension director.
- Extension programs are nonpolitical, objective, and research-based information.
- It provides practical, problem-oriented education for people of all ages. It is designated to take the knowledge of the university to those persons who do not or cannot participate in the formal classroom instruction of the university.
- It utilizes research from university, government, and other sources to help people make their own decisions.
- More than a million volunteers help multiply the impact of the Extension professional staff.
- It dispenses no funds to the public.
- It is not a regulatory agency, but it does inform people of regulations and of their options in meeting them.
- Local programs are developed and carried out in full recognition of national problems and goals.
- The Extension staff educates people through personal contacts, meetings, demonstrations, and the mass media.
- Extension has the built-in flexibility to adjust its programs and subject matter to meet new needs. Activities shift from year to year as citizen groups and Extension workers close to the problems advise changes.

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Program to Estimate Feedlot Cost of Gain (FLCALC Revision 3)

Chris Richards
Associate Professor, Animal Science

David L. Lalman
Extension Beef Cattle Specialist

Electronic spreadsheets can be used to evaluate the performance and profit potential of cattle confinement operations. This publication describes the methods for estimating cattle performance and financial aspects of cattle feeding using a spreadsheet program. The program described was written using Excel.

Gains can be estimated from past experience or by using net energy equations, which have been used for years to predict feedlot gain with a high degree of accuracy. When predicting gains with the program, the user is asked to calculate the Net energy for maintenance (NEm) and Net energy for gain (NEg) using values of the diet on a dry matter basis. The user then inputs the expected average daily feed intake for the feeding period. Cattle feeders will often estimate feed intake from past feeding experience. If in doubt, custom feedlots can usually help cattle owners estimate feed intake. The following rules of thumb may be helpful. With light weight cattle, dry matter intake approaches 3 percent of their weight. Most larger feedlot cattle will not average over 2 to 2.5 percent of their mean feeding weight. The mean feeding weight is calculated and shown in the upper right of the screen and print out.

Estimation of average daily gain can be checked using the energy values calculated from the ration. If feed energy values or feed intakes are set too high, calculated gain will be too high, and conversely if set too low. Data are expressed on a pay-to-pay basis.

The original version of the program used the 1974 NRC equations, which were developed in the 1960s for steers and heifer calves. Over the years, additional growth potential has been bred into cattle. By providing the additional six equations published in the 1984 NRC Nutrient Requirements of Beef Cattle, the user should be able to better match this program to the cattle being fed. The two original equations are retained for reference and for the many cattle to which they still apply.

Inputs necessary to evaluate a cattle feeding venture involve the usual cattle and financial information, along with the cost, moisture content, and net energy values of the feedlot ration. This program is designed for the user to enter data on a trial basis, i.e. make an entry and see what impact it has on the cost of gain or profitability.

The program format is shown in Table 1. In copies of this program distributed by OSU, all cells except those the user should change are protected. The protection of cells containing equations is necessary because any value entered over a calculated number will result in the equation being erased. The unprotected cells requiring inputs (boldface in Table 1) are listed below in the same order that they appear on the screen.

1. Cattle cost ($/cwt.) delivered to the lot.
2. Purchase weight in pounds (this program works pay-to-pay).
3. Days to be fed (days on feed).
4. Animal frame size and sex type 1-8.
5. Feed cost ($/ton on an as fed basis).
6. Dry matter content of ration (%).
7. Expected selling price ($/cwt) of the cattle at market time.
8. Equity in the cattle ($/head, Interest free money).
9. Cattle finance rate (%).
10. Freight to the feedlot ($/head).
11. Estimated death loss (%).
12. Medical cost ($/head).
13. Beef check off ($/head).
14. Other costs such as hedge or option costs ($/head).
15. Yardage cost, if charged ($/day).
16. Estimated feed intake (average pounds of dry matter/day).
17. Estimate of daily gain in pounds/head/day.
18. Interest cost on the operating capital (%).
19. Ration inputs (upper right side).

Ration NEm (entered as mcal/100 pounds).
Ration NEg (entered as mcal/100 pounds).
Both of these items should be on a dry matter basis.

Note in the listing that some very critical data and equations are stored in column one (off the sheet) on an 80-column screen. These are the net energy equations and a number of other critical statements. This is done to avoid clutter on the screen. The net energy equations used are the steer and heifer equations published in the 1976 and 1984 editions of the NRC Nutrient Requirements for Beef Cattle. These equations have worked well for estimations made on a pay-to-pay basis assuming normal and reasonable weighing conditions and shrinks. When making modifications to the program, it is critical that these statements not be damaged. It is recommended to renamed the working copy before making modifications.

Table 1. Sample output of FLCALC.

OSU FEEDLOT PERFORMANCE PROGRAM. **DATE PLACED ON FEED —> 12/11/01**
Enter starting date ('mm/dd/yy)—> 12/11/01

MEDIUM-FRAME STEER CALVES.

		Optional inputs*	
Cattle cost $ per/cwt.	**$81.93**		
Purchase weight lbs.	**703**	**Ration NEm***	**97.00**
Days fed	**128**	**Ration NEg***	**63.00**
Sex and body type (1-8)	**6**	(Average energy for feed period)	
Feed cost per ton 'as is'	**$135.28**		
Ration dry matter (%)	**100.00**	Feed cost/ton DM	$135.28
Selling price $/cwt.	**$71.00**	Mean feeding weight	925.82

	(INPUTS)	Total cost	Cost per day($)
Equity in ($/head)	**$100.00**		
Cattle interest rate (%)	**8.00**	$13.67	$0.11
Freight to feedlot $/head	**$4.50**	$4.50	$0.04
Death loss %	**0.75**	$4.38	$0.03
Medical cost/head ($)	**$8.00**	$8.00	$0.06
Beef check off ($) head	**$1.00**	$1.00	$0.01
Other cost ($/head)	**$0.00**	$0.00	$0.00
Yardage cost ($/day)	**$0.05**	$6.40	$0.05
Daily feed dry matter (#)	**21.00**		
Estimated daily gain (#)	**3.30**		
Operating interest (%)	**8.00**	$2.80	$0.02
Non-feed total $		$40.75	$0.32
Feed cost / head $		$181.82	$1.42
Total cost $		$222.57	$1.74

EXPECTED SALE DATE—> 04/18/02	YOUR VALUES	USING NET ENERGY VALUES
Daily gain lbs. adjusted	3.30	3.48
Feed DM/lbs. of gain	6.36	6.03
Cost of gain feedlot basis $	$46.45	$44.03
Cost of gain total $	$52.69	$49.94
Expected sale weight lbs.	1,125.40	1,148.64
Total dollars returned	$799.03	$815.53
Total less original cattle cost	$223.07	$239.56
Break-even selling price	$70.96	$69.52
Profit or loss/head ($)	$.50	$17.00
Return on equity invested (%)	1.40	47.80
Break-even purchase price ($/cwt.)	$82.00*	$84.35*

* ASSUMES THAT ALL PROFIT OR LOSS IS ADDED OR SUBTRACTED TO THE PURCHASE COST.
ENERGY WAS USED AT 100 PERCENT OF YEARLY EXPECED EFFICIENCY FOR CLOSE OUT MONTH OF APRIL

FILE NAME IS FLCALC

Developed by Donald Gill & David Lalman, Oklahoma State University, 1999. Revised 4/24/01

Body Type: Eight net energy equations (Table 2) are included in this program. They are based on (1-6) the 1984 NRC equations. Equations 7 and 8 were used in the original version of this program. The two original equations were used most frequently in receiving programs where weight gain was often a recovery of purchase weights. The equations for large frame cattle (2 and 3) will result in more gain on the same amount of feed. Select the equation that best describes the cattle being fed. Equations 7 and 8 describe what some might call small frame cattle today. The equation selected is identified on the sheet.

Table 2. Animal frame and sex type selection table.

1	Large-frame bull calves and compensating large-frame yearling steers.
2	Large-frame heifer calves and compensating medium-frame yearling heifers.
3	Large-frame steer calves and compensating medium-frame yearling steers.
4	Medium-frame bulls.
5	Medium-frame heifer calves.
6	Medium-frame steer calves.
7	NRC 74 steer equation.
8	NRC 74 heifer equation.

This program uses a circular calculation to estimate mean feeding weight because the mean feeding weight of the animal cannot be determined until the program is recalculated.

Some cattle feeders may desire more options for evaluating weather conditions, cattle types, multiple rations, or modifications of the energy requirements. In these cases, users may wish to use OSU Beefgain, which is a more flexible program. It may be obtained from Extension Animal Science at Oklahoma State University.

In many areas of the country weather and other factors affect cattle performance. To the right of the spreadsheet is the option to increase or decrease the efficiency of cattle by the month that they are marketed. The default value for no change is 100. If expected performance falls below the norm for cattle marketed in March, entering 95 implies that the close out gain would be only 95 percent of the expected performance. These factors only apply to the gain computed using net energy values. They do not apply to the input expected gain to the left of this value.

A suggested set of default values for Oklahoma feedlots might be: January 98, February 97, March 96, April 95, May 98, June 99, July 100, August 101, September 102, October 103, November 100, and December 99. Both feeding conditions and the acclamation background of the cattle affect these factors.

For example, cattle from the South might not do as well as cattle from the North if the close out is March. If cattle are expected to close out in September, the northern cattle may be at a disadvantage depending on the length of time they had been on feed.

Copies of OSU Animal Science developed programs are available from: Extension Animal Science Department, 201 Animal Science Building, Oklahoma State University, Stillwater, OK 74078; or they are available for download from the Animal Science web site www.ansi.okstate.edu.