



Grid Pricing Calculator

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This fact sheet describes a Microsoft Excel spreadsheet designed to teach several aspects of grid pricing and its implications. The spreadsheet is referred to as *GridCalcCEW*. In essence, *GridCalcCEW* allows users to enter data on actual (or hypothetical) grids and actual (or hypothetical) carcass traits, and see the resulting premiums, discounts, and net price. It allows two levels of data input aggregation, individual carcass data and pen-level carcass data. Users also can use the spreadsheet to estimate the value of feeder cattle when using fed cattle price grids.

GridCalcCEW Description

There are multiple ways to calculate net grid prices (i.e., base price plus carcass premiums and discounts). Two simple methods of arriving at the same net grid price are incorporated into *GridCalcCEW*. Users need to be aware that this calculator does *not* enable evaluating many grid pricing systems found in the industry. In all three sheets, cells requiring data from the user are highlighted in yellow. The spreadsheet comes with a standard example. Thus, users not wanting to change some cells can treat them as default values. Users are encouraged to save the original version and treat it as a "backup." Then users can make whatever changes are desired in the spreadsheet copy without disturbing the original version. If cells and formulas are altered, the user can revert to the original, copy it to another "working copy" file, and begin again. For examples of the three sheets see Figures 1, 2, and 3.

The top portion of sheets one and two are similar. However, sheet one (labeled IndCarc) requires data on individual carcasses, while sheet two (labeled AggCarc) requires only a summary or aggregation of carcass data. Packers can provide individual carcass data, but may only provide the summary data.

On both sheets, users are asked to provide the base price. This may be known or be an estimate, especially if cattle are sold on a formula basis. In either case, the base price on a dressed or carcass weight basis is required. All prices, including premiums and discounts are in \$/dressed cwt. Users also enter the number of head in the sale lot. To the right on both sheets there is one or two checks on total carcasses to ensure the correct number of carcasses have been entered correctly elsewhere on the sheet.

The next section is similar for both sheets. It summarizes the premiums, discounts, net premium or discount, and net price. With either level of carcass data and method of calculating the net price, the net price is the same. However, the sum of carcass premiums and discounts differs due to the arithmetic process for calculating the net price. Exact premiums and discounts are calculated in sheet one, the sheet that requires the most detailed carcass data.

Further down the first sheet is a grid with cells highlighted. These cells require entering the quality grade and yield grade premiums from a packer grid (or a hypothetical grid). The grid assumes the base type of carcass is a Choice quality grade, yield grade 3 carcass. Thus, the quality grade premiums and discounts are relative to Choice quality grade. Similarly, the yield grade premiums and discounts are relative to yield grade 3. One row is for Upper Choice quality carcasses. Many times this is referred to CAB or Certified Angus Beef carcasses in grids. However, some grids may refer to them more generically as carcasses in the upper x portion (here two-thirds) of the Choice grade range. After entering the premiums and discounts, the spreadsheet completes the premium-discount grid. Both methods of calculating the net price assume cells in the grid are additive. Thus, a \$13.00/cwt. premium for Choice carcasses and an \$8.00/cwt. premium for

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yield grade 1 carcasses, adds to a \$21.00/cwt. premium for Choice, yield grade 1 carcasses. Users also enter discounts for lighter and heavier carcasses and for "out" carcasses. Note that some grids are not additive. Also, some packers will not allow a second discount on already-discounted carcasses. This calculator does not have that capability. The exact nature of the double discount would have to be known. Thus, for example, a carcass discounted for quality grade or yield grade reasons might also be discounted because of its weight.

Further down sheet one is another grid with all cells highlighted. This is where individual carcass data are required. Users must enter the number of carcasses falling into each cell of the carcass characteristics grid. If the number of carcasses in the "check" cells differs from the entered number for lot size, then there is an error in the number of carcasses entered by grade and yield grade. Below the grid are cells for entering the number of light or heavy carcasses, "out" carcasses, the live weight, and dressed (carcass) weight of the sale lot. If only the sum of carcasses in quality grade rows and yield grade columns is known, then users should use sheet two instead of sheet one.

That completes data entry for sheet one. Further down the sheet is a grid and cells showing the premium or discount. This is calculated from the premium-discount grid and the number of carcasses (converted to percentage of the sale lot total) in the carcass distribution grid.

Sheet two requires similar, but less detailed data from the user. First is a similar section as in sheet one requiring the base price and number of animals in the sale lot. Below that is a section that sums premiums, discounts, net premiums or discounts, and net grid price. Below that is the grid entry section, which differs from sheet one. In sheet two, premiums and discounts are entered in a column of cells, rather than in a grid framework. The same data are entered as for sheet one; for example, premiums for Prime and Upper Choice carcasses and for yield grades 1 and 2 carcasses, and discounts for Select and Standard carcasses and for yield grades 4 and 5 carcasses. There is an identical section in which to enter weight discounts and "out" discounts as in sheet one.

To the right of the grid entry cells, is another column in which to enter carcass characteristics. Carcass data for these cells are the sum of carcasses for each quality grade and yield grade. Users might note that the default values in sheet two are the row and column totals from the default carcass distribution grid of sheet one. Again, similar to sheet one, if the number of carcasses in the "check" cells differs from the entered number for lot size, then there is an error in the number of carcasses entered by grade and yield grade. As with sheet one, below the data entry columns is a column of cells in which to enter the number of light or heavy carcasses, "out" carcasses, the live weight, and dressed (carcass) weight of the sale lot.

That completes data entry for sheet two. Further down the sheet is a grid and cells showing the premium and discount in selected cells of the grid. Because of the arithmetic process employed, only premiums and discounts on the Choice row and yield grade 3 column are shown. These are calculated from the premium-discount grid and number of carcasses (converted to percentage of the sale lot total) in the rows and columns of the carcass distribution grid. Using row and column totals, rather than each cell of the carcass distribution grid is why the sum of premiums and discounts differs between sheets one and two.

Figure 1. IndCarc, Grid Pricing Spreadsheet: Individual Carcass Data

(Data entry cells are highlighted.)

Base price	\$/cwt	120.00				
Lot size	Head	135	Total carcasses check			135
Premiums	\$/cwt					
Prime-Upper Choice, Yield 1-2						
Sum		2.40				
Discounts	\$/cwt					
Select-Standard, Yield 4-5		-3.60				
Weight		-0.37				
Other		-0.44				
Sum		-4.41				
-2.01						
117.99			Net price		Net premium/discount \$/cwt	\$/cwt

Packer Grid Premiums and Discounts (\$/cwt)

Quality grade	Yield grade	1	2	3	4	5
Prime		21.00	16.00	13.00	-7.00	-17.00
Upper Choice		12.00	7.00	4.00	-16.00	-26.00
Choice		8.00	3.00	0.00	-20.00	-30.00
Select		1.00	-4.00	-7.00	-27.00	-37.00
Standard		-4.00	-9.00	-12.00	-32.00	-42.00

Weight discount	\$/cwt				
Less than 550 lbs		-10.00			
More than 950 lbs		-15.00			
Other discounts	\$/cwt				
Dark cutters		-20.00			
Heiferettes		-20.00			
Stags		-20.00			

Carcass Distribution (number of head)

Quality grade	Yield grade	1	2	3	4	5	Total
Prime		1	2	3	4	3	13
Upper Choice		4	10	12	5	1	32
Choice		4	10	40	3	1	58
Select		4	2	22	1	0	29
Standard		1	2	0	0	0	3
Total		14	26	77	13	5	135

Weight	Less than 550 lbs	2	Live weight (lbs)	1250
Other	More than 950 lbs			
Stags	Heiferettes	1		62.4

Carcass Premiums and Discounts (\$/cwt)

Yield grade	4	5	Upper Choice	Prime	Quality grade
3	-0.21	-0.38			0.16
2	0.24	0.29	Choice	0.24	0.52
1	0.36	-0.59	0.03	-0.06	0.00
	-0.44	-0.22	-0.03	0.00	-0.20
	0.00		-0.13		0.00

Weight	Less than 550 lbs	-0.15
Other	More than 950 lbs	-0.22
Stags	Dark cutters	-0.15
	Heiferettes	-0.15

Figure 2. AggCarc, Grid Pricing Spreadsheet: Aggregated Carcass Data

(Data entry cells are highlighted.)

Base price	\$/cwt	120.00		
Lot size	Head	135	Total carcasses check 1	135
			Total carcasses check 2	135
Premiums	\$/cwt			
Prime-Upper Choice, Yield 1-2				
Sum		3.61	Note: Not exact sum of premiums.	
Discounts	\$/cwt			
Select-Standard, Yield 4-5		-4.81		
Weight		-0.37		
Other		-0.44		
Sum		-5.62	Note: Not exact sum of discounts.	
Net premium/discount	\$/cwt	-2.01	Note: Correct net.	
Net price	\$/cwt	117.99		

Packer Grid Premiums and Discounts

Quality grade	
Prime	8.00
Upper Choice	3.00
Choice	0.00
Select	-20.00
Standard	-30.00

Carcass Distribution

Quality grade	
Prime	14
Upper Choice	26
Choice	77
Select	13
Standard	5

Yield grade

1	8.00
2	3.00
3	0.00
4	-20.00
5	-30.00

Yield grade

1	14
2	26
3	77
4	13
5	5

Weight discount

Less than 550 lbs	\$/cwt	-10.00
More than 950 lbs	\$/cwt	-15.00

Weight

Less than 550 lbs	2
More than 950 lbs	2

Other discounts

Dark cutters	\$/cwt	-20.00
Heiferettes	\$/cwt	-20.00
Stags	\$/cwt	-20.00

Other

Dark cutters	1
Heiferettes	1
Stags	1

Live weight (lbs) 1250
 Carcass weight (lbs) 780
 Dressing % 62.4

Carcass Premiums and Discounts (\$/cwt)

Quality grade	Yield grade				
	1.00	2.00	3.00	4.00	5.00
Prime			1.25		
Upper Choice			0.95		
Choice	0.83	0.58	0.00	-1.93	-1.11
Select			-1.50		
Standard			-0.27		

Weight

Less than 550 lbs	-0.15
More than 950 lbs	-0.22

Other

Dark cutters	-0.15
Heiferettes	-0.15
Stags	-0.15

Grid Calculator Uses

There are several potential uses for *GridCalcCEW*. Again, users are encouraged to make a "backup" file and to do (and save) the many "what if" scenarios with a copied file. This saves the original version. The copy can be used for whatever purpose the user chooses. If cells and formulas are altered, the user can revert to the original, copy it to another "working copy" file, and begin again.

One use for the spreadsheet enables cattle producers to estimate premiums, discounts, net price for their expected carcass characteristics, and alternative grids. For example, producers may want to assess differences in premium totals, discounts totals, and the net price with alternative grids. This may entail specific grids or grid types (such as quality-oriented or yield-oriented grids) or which grids could be expected to return the most money for their cattle? What changes in genetics or management might be necessary to better fit cattle to a specific grid? These "what ifs" may be based on known or assumed carcass characteristics and grids.

Similarly, a producer might wish to estimate how a change in genetics or management might change the net price in a grid sale. For example, given a specific grid, what if a change in management such as sorting and selling cattle in groups would have eliminated discounted carcasses, yield 4-5 carcasses, "out" carcasses, etc.? What if changing bulls increases percent Choice or yield grade 2 carcasses?

Uses such as these can be accomplished with sheets one and two. Sheet three provides another type of use. Cattle feeders, who use grid pricing, typically observe a wide range of carcass value in a pen of cattle. For an extreme example, a Prime grade, yield grade 1 carcass is worth many dollars per hundredweight more than a Standard grade, yield grade 5 carcass. Therefore, when buying feeder cattle to place in the feedlot, the breakeven price for feeder cattle that could grade Prime, yield grade 1 at harvest are worth considerably more than feeder cattle that will only grade Standard, yield grade 5.

Sheet three (labeled BEPs) is a simplified way to enter the value differences for a few quality and yield grade combinations of carcasses. Those fed cattle value differences plus alternative placement weights, ending weights, and costs of gain, enable calculating breakeven prices for feeder cattle that would eventually produce carcasses of the specified quality and yield grade.

In the top portion of sheet three, users can enter three alternative placement weights, three alternative costs of gain, and three alternative harvest end points (live weight and dressed weight). In the following section is a column in which users enter dressed weight

carcass values. These are a base price plus or minus a premium or discount associated with a specific combination of quality grade and yield grade. Default values in sheet three are the same as grid values in sheets one and two. For example, a base price of \$115/dressed cwt. is assumed. Then for Prime, yield grade 1 carcasses, a premium of \$21/cwt. is assumed, giving a value of \$136/cwt.

The bottom portion of the sheet shows the breakeven prices. This provides information on how breakeven prices change with changes in placement weights, harvest weights, and cost of gain changes, given the same carcass values.

Summary and Conclusions

There are many different price grids for fed cattle and many different ways of calculating the net price for a pen of cattle. *GridCalcCEW* illustrates two simplified methods. It does not contain any packer's specific grid. The spreadsheet is intended to enhance understanding of grid pricing along with potential changes in genetics and management that affect carcass performance. Users are encouraged to read the other extension facts available on grid pricing. Similarly, the calculator can be used to better understand the value differences among feeder cattle that are expected to fall into specific quality and yield grade combinations at harvest.

Successful use of grids requires knowing:

- Carcass characteristics of the cattle harvested and priced on a grid
- Knowledge of the grid and how it is calculated
- Knowledge of how changes in genetics and management may change the net price outcome from using a grid.

Ideally, *GridCalcCEW* can help producers learn more about grid pricing in order to use grid pricing more effectively.

Three Extension fact sheets discuss several aspects of grid pricing.

- WF-557, *Fed Cattle Pricing: Grid Pricing Basics*
- WF-560, *Grid Pricing of Fed Cattle: Base Prices and Premiums-Discounts*
- WF-561, *Grid Pricing of Fed Cattle: Risk and Information*

GridCalcCEW is available at no charge from Clement Ward, 515 Agricultural Hall, Oklahoma State University, Stillwater, OK, 74078. It can be mailed on a floppy disk or attached to an email.

Figure 3. BEPs, Grid Pricing Spreadsheet: Breakeven Analysis

		Case 1	Case 2	Case 3
(Data entry cells are highlighted.)				
Placement weight	Lbs	400	600	800
Cost of gain	\$/lb	0.40	0.45	0.50
Dressed weight	Lbs	700	800	900
Live weight	Lbs	1100	1260	1420
Dressing percentage	%	63.64	63.49	63.38
Net price	\$/cwt	117.99		
Prime, YG 1	\$/cwt	136.00		
Upper Choice, YG2	\$/cwt	122.00		
Choice, YG 3 (Base)	\$/cwt	115.00		
Select, YG 4	\$/cwt	88.00		
Standard, YG 5	\$/cwt	73.00		
Breakeven Price		Case 1	Case 2	Case 3
Net price	\$/cwt	1.36	1.08	0.94
Prime, YG 1	\$/cwt	1.68	1.32	1.14
Upper Choice, YG2	\$/cwt	1.44	1.13	0.99
Choice, YG 3 (Base)	\$/cwt	1.31	1.04	0.91
Select, YG 4	\$/cwt	0.84	0.68	0.60
Standard, YG 5	\$/cwt	0.58	0.48	0.43

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