



# Carcass Discounts and Grid Pricing Implications

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Grid pricing of fed cattle is considerably more difficult to understand than live weight pricing. Many things change simultaneously, the base price, grid premiums and discounts, and carcass characteristics of the cattle marketed. These, of course, are in addition to all the economic factors that affect prices.

Previous extension fact sheets have attempted to provide information regarding grid pricing mechanics, historical information on carcass premiums and discounts, grid pricing risks, and the value of additional information from grid pricing. A grid pricing calculator (Microsoft Excel spreadsheet) is available to assist in learning how various factors affect net grid prices. The most recent addition to this information addresses issues and alternatives related to grid pricing. Previous extension fact sheets about grid pricing can be located at <http://osuextra.okstate.edu/dept/econ/mktingoutlook.shtml>.

This extension fact sheet addresses an important component of grid pricing. Research consistently confirms the two most important carcass discounts for grid pricing are those for quality grade Select carcasses relative to Choice and yield grade 4/5 carcasses relative to yield grade 3 (Ward, Feuz, and Schroeder). These discounts can significantly affect grid pricing outcomes. Thus, this extension fact sheet updates the historical carcass premium and discount series from a previous fact sheet, relates the discounts to fed cattle weight, identifies the seasonal pattern for these discounts, and discusses some implications for grid pricing. Readers will benefit most from this extension fact sheet if they already have a reasonably good understanding of grid pricing, either from reading the extension fact sheets at the above-mentioned site or elsewhere or from having experience with grid pricing.

## Sources of Carcass Discounts

Premiums and discounts related to quality grades have their origin in consumer demand since quality grades are intended to relate to eating quality and consumer satisfaction. Value differences between quality grades affect retail prices and are passed back to producers through wholesale prices and fed cattle prices. Prime grade carcasses (and fed cattle) typically receive the highest prices, followed by Choice grade, then Select and Standard grades.

Yield grades have their origin in value differences in inputs (fed cattle) to packers and retailers. Yield grades do not relate to consumer satisfaction directly but to the amount

of marketable retail cuts from the carcass. As yield grades increase from 1 to 5, carcasses have fewer pounds of marketable retail cuts and more waste. Yield grade 1 carcasses result in more marketable retail cuts than do yield grade 2 and are valued higher; yield grade 2 more than yield grade 3; and yield grade 3 more than either yield grades 4 or 5.

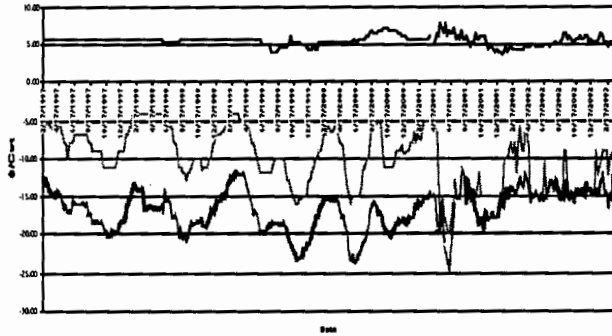
The advent of grid pricing brought with it larger price differences between some quality and yield grades than existed previously, both larger premiums and larger discounts. In addition, the move to grid pricing greatly increased the information available on carcass discounts. For many producers, grid pricing afforded an opportunity to be paid for producing higher quality cattle. Simultaneously, it penalized producers who did not respond to price signals and marketed cattle that were less demanded by packers.

## AMS-USDA Reporting of Carcass Premiums and Discounts

In November 1996, the Agricultural Marketing Service (AMS) of USDA began issuing a weekly report of carcass premiums and discounts. This was a voluntary report of what participating packers expected to pay the following week for cattle purchased on a grid.

Later, the report was among those covered under the mandatory price reporting legislation that was implemented in April 2001. In one sense, the report did not change. Packers still indicate what premiums and discounts they expect to pay in grids for fed cattle purchased the following week. This national report, Weekly Direct Slaughter Cattle Premiums and Discounts, can be accessed at <http://www.ams.usda.gov/lsmnpubs/CSDN.htm>. What did change is that under mandatory price reporting, AMS can check packer records to verify that the reported premiums and discounts are in line with what they actually paid for fed cattle. Most packers offer several premium-discount grids. Therefore, the reported grids are likely their average or generic grid, not one targeted to a specific marketing program or organization.

Figure 1 shows historical data for selected quality grade premiums and discounts. Prime carcasses receive a relatively consistent premium (about \$5/cwt.). The carcass discount for Select carcasses (the middle line in Figure 1) varies widely. Prior to mandatory price reporting, the discount for Standard carcasses was essentially a consistent additional discount

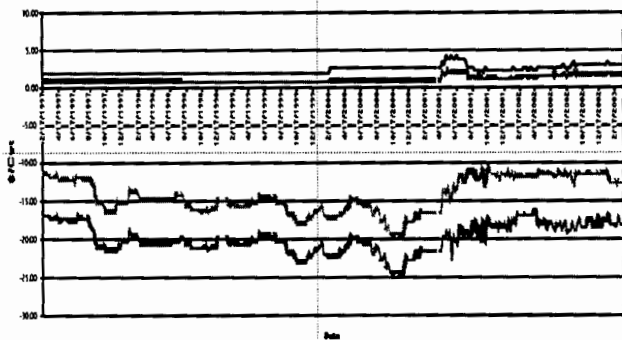


**Figure 1. Carcass quality grade premiums and discounts, 1997-2003.**

to the Select discount. Since mandatory price reporting, the discount appears to have become smaller and fluctuates more. One probable reason is that this premium and discount report since mandatory price reporting is a broader report than previously, thus representing more reporting packers. Over the period shown in Figure 1 (through March 2003), the Select carcass discount averaged  $-\$7.33/\text{cwt.}$  with a low of  $-\$0.24/\text{cwt.}$  and a high of  $-\$19.13/\text{cwt.}$

Figure 2 shows historical data for selected yield grade premiums and discounts. Yield grade 1 and 2 carcasses typically receive a relatively consistent premium (about  $\$1-\$2/\text{cwt.}$ ). The more variable discount series is for yield grade 4/5 carcasses. Both before and after mandatory price reporting, the discount for yield grade 5 carcasses is a relatively consistent additional discount compared with the yield grade 4/5 discount. For the period shown in Figure 2 (also through March 2003), the discount for yield grade 4/5 carcasses averaged  $-\$14.33/\text{cwt.}$  with a low of  $-\$0.00/\text{cwt.}$  or a par with yield grade 3 carcasses, to a high of  $-\$19.50/\text{cwt.}$

Since the quality grade Select discount and yield grade 4/5 discount vary more than others, these are the ones that are of concern to cattle feeders marketing fed cattle on a grid. These two can significantly affect net grid prices for fed cattle.



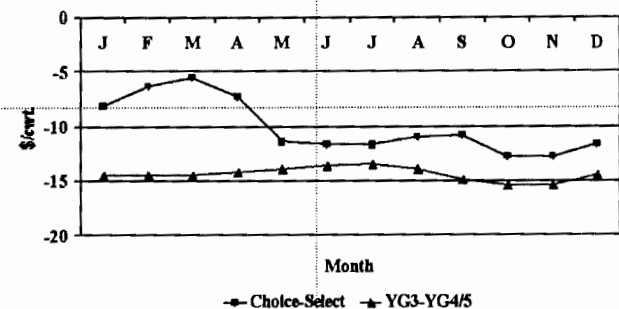
**Figure 2. carcass yield grade premiums and discounts, 1997-2003.**

## Seasonal Patterns for Carcass Discounts

The historical carcass discounts in Figures 1 and 2 appear to have some repeating pattern, especially prior to mandatory price reporting. Figure 3 is a graph of the monthly average quality grade Select and yield grade 4/5 discounts for the same data period as in Figures 1 and 2. More of a seasonal pattern is evident in the Select carcass discount than in the yield grade 4/5 discount.

Interpretation of the graph is just the reverse of what it appears. For example, the Select discount lessens in the winter months to its seasonally lowest average in March ( $-\$5.47/\text{cwt.}$ ). In Figure 3, this is indicated by the increasing part of the Choice-Select discount line moving toward a  $\$0.00/\text{cwt.}$  discount. When the Select discount shrinks or gets smaller, there is little incentive to feed cattle longer to heavier weights with a higher percentage of Choice carcasses. At least part of this seasonal pattern is demand related. Typically, the demand for Choice grade beef is lower in the winter months because of more indoor cooking. Consumers may buy more roasts for oven cooking and may not place as much emphasis on quality grade of beef purchased. Then from May to December, the discount begins to widen and remains relatively flat with larger discounts. The larger discounts signal to cattle feeders to feed cattle longer so as to increase the percentage of Choice grade carcasses. The demand for Choice grade beef increases as consumers purchase Choice grade or higher beef and do more outdoor grilling. The largest seasonal discounts occur in October and November ( $-\$12.76$  and  $-\$12.81/\text{cwt.}$ , respectively).

Less seasonal variation is noted in the yield grade 4/5 discount. The smallest discount occurs in July ( $-\$13.48/\text{cwt.}$ ) and the largest in October and November ( $-\$15.45$  and  $-\$15.49/\text{cwt.}$ , respectively). The marketplace discourages overfinishing fed cattle throughout the year. Overfinishing results in more external fat which must be trimmed at added cost to a packer and which has very little market value.



**Figure 3. Seasonal pattern for Choice-Select and yield grade 3-yield grade 4/5 price differences, 1997-2003.**

## Carcass Discount Relationships to Fed Cattle and Carcass Weights

Carcass discounts are related in general terms to fed cattle and carcass weight. Figures 4 and 5 show the general relationships and help explain the importance of these discounts to grid pricing.

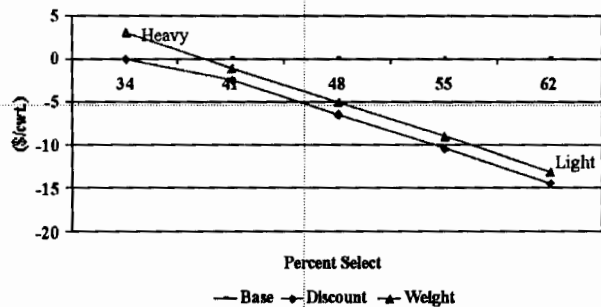


Figure 4. Carcass weight and quality grade select discount relationship.

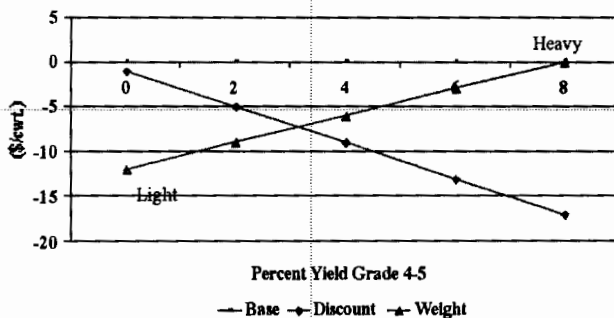


Figure 5. Carcass weight and yield grade 4/5 discount relationship.

As a pen of cattle remains on feed and continues gaining weight, it typically produces a larger percentage of Choice grade carcasses and a smaller percentage of Select grade carcasses. Therefore, as average fed cattle and carcass weights increase in the industry, the result is a larger percentage of Choice grade carcasses and a smaller percentage of Select grade carcasses. At this point, noted in Figure 4 by the Heavy end of the weight line, there is only a small discount for Select grade carcasses. As weights decline, usually from having fewer days on feed, the percentage of Select carcasses increases and percentage of Choice carcasses decreases. As this occurs, the discount for Select carcasses increases (and the discount line in Figure 4 declines, indicating larger discounts). Essentially, the market signals to cattle feeders to feed cattle longer, thus marketing heavier cattle that have a higher percentage of Choice carcasses.

A similar explanation but with a notable difference can be made for yield grade discounts. As a pen of cattle remains on feed and continues gaining weight, it typically produces a larger percentage of yield grade 4/5 carcasses and a smaller percentage of yield grade 1-3 carcasses. So across the industry, heavier fed cattle and carcasses result in a higher percentage of yield grade 4/5 carcasses and smaller percentage of yield grade 1-3 carcasses. This can be seen in Figure 5 by the Heavy end of the weight line. Thus, as average weight increases, there are more carcasses that are overfinished and carry more fat than the marketplace wants. These are heavily discounted, as indicated by the downward sloping line in Figure 5. The market signals to cattle feeders to reduce cattle weights and finish, thereby reducing the percentage of overfinished and lesser-valued, yield grade 4/5 carcasses.

Note that the carcass discount lines in Figures 4 and 5 are similarly downward sloping. However, the carcass weight lines lie in opposite directions. This illustrates the physiological tradeoff as cattle become heavier. Heavier cattle have more Choice grade (desirable) carcasses but also more yield grade 4/5 (less desirable) carcasses. So as fed cattle get heavier, the discount for quality grade declines but the discount for yield grade increases. At lighter weights, the reverse is true. Lighter cattle have more Select grade (less desirable) carcasses and more yield grade 1-3 (desirable) carcasses. Cattle feeders have to weigh these tradeoffs as they determine a near-optimal marketing weight. Prevailing market conditions need to be considered. The result may differ depending on the time of year and size of the premiums and discounts in grids.

## Grid Pricing Implications

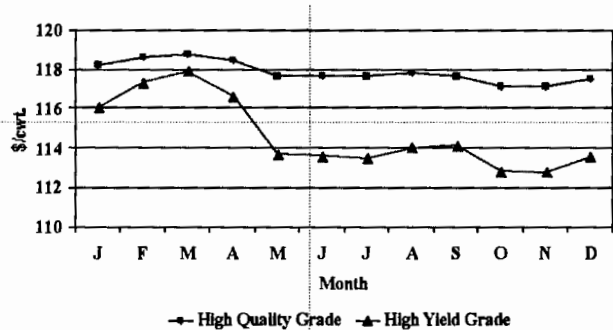
Cattle feeders need to consider the quality attributes of the cattle being marketed. For example, seasonal differences in carcass discounts affect higher quality and lower quality cattle differently. To illustrate, GridCalcCEW (Ward) was used to compare two very different pens of cattle with a grid that changed according to the monthly average Select discount and monthly average yield grade 4/5 discount as shown in Figure 3. One pen of cattle is referred to as high quality and the other as high yielding. The primary differences in carcass composition are summarized here.

	Higher quality, lower yielding pen	Lower quality, higher yielding pen
% Choice or above	80	30
% Select or below	20	70
% Yield grades 1-3	85	100
% Yield grades 4-5	15	0

A set of calculations was made for the high quality pen and another for the high yielding pen. Within each set of calculations, carcass characteristics remained the same, the base price remained the same in all calculations, and grid premiums and discounts were the same except for the Select discount and yield grade 4/5 discount. Those carcass discounts varied according to the monthly average discount for each.

The objective was to determine how much the seasonal changes in carcass discounts affected net grid prices, holding other price-influencing factors constant. Results are shown in Figure 6. The seasonal differences in discounts had less effect on net grid prices for the high quality cattle than the high yielding cattle. This is shown by the small month-to-month change in net grid prices for the high quality cattle compared with the high yielding cattle in Figure 6. Across the twelve months, net prices for the high quality pen ranged from \$118.75 to \$117.14/cwt., a difference of \$1.61/cwt. For the high yielding pen, the range was from \$117.91 to \$112.78, a difference of \$5.13/cwt. The month with the highest net price for both sets of cattle was March and the lowest month for both sets was November. However, in March, the difference between the net prices was \$0.84/cwt., while in November it was \$4.36/cwt.

Monthly average carcass discounts for Select and yield grade 4/5 carcasses were widest in March, yet the net price



**Figure 6. Seasonal net price impacts for higher and lower quality cattle and seasonal carcass discounts.**

for the two types of cattle was the narrowest in March. This suggests the relative importance of having Choice grade or higher cattle. It also suggests that the timing of when higher quality or higher yielding cattle are placed on feed is important. The placement month affects the marketing month, which in turn typically means different carcass discounts and net grid prices.

The point just made, plus the earlier point that high quality cattle were affected less by the seasonal discounts than were the high yielding cattle, implies producers should strive for higher quality cattle. However, an important caution needs to be mentioned. There is likely a higher investment cost for the necessary genetics to have higher quality cattle and the production costs may be higher as well. There is a tradeoff in costs and returns that must be considered before simply setting a target of having higher quality grade cattle.

### Forecasting Carcass Discounts

Little research is available to assist in forecasting or predicting weekly discounts for Select and yield grade 4/5 carcasses. However, Hogan used available data to estimate several models and found that forecasting these discount series is difficult. Several econometric problems were encountered and the results were not always consistent or satisfying.

A few observations can be made.

- As boxed beef prices increased, the Select discount increased but not the yield grade 4/5 discount.
- The statistical relationship between live weight and percentage of Choice and yield grade 1-3 carcasses was unlike what was described above and shown in Figures 4 and 5. There was no significant relationship between live weight and either carcass discount. Similarly, there was no significant relationship between the percentage of Choice and yield grade 1-3 carcasses and either carcass

discount. It may be that other broad market forces swamp these relationships, even though they make sense on a more microeconomic level.

- Seasonality of the Choice-Select discount was more important than for the yield grade 4/5 discount. Results from the estimated models were generally consistent with the monthly average patterns shown in Figure 3.

Together, results suggest more research is necessary to provide producers much assistance in predicting carcass discounts. None of the models estimated provided significant help in forecasting the Select and yield grade 4/5 discounts. Perhaps most important is recognizing the seasonal patterns for each. This alone may assist in evaluating when it may be economical to feed cattle longer, to heavier weight, and with a higher percentage of Choice grade carcasses without significantly more yield grade 4/5 carcasses. Also important is recognizing that the absolute level of the Select discounts changes as boxed beef prices change. Apart from marketing weight and the percentage of Choice grade, yield grade 1-3 carcasses in the pens of cattle sold, which is related to days on feed, individual cattle feeders cannot influence seasonality of the discounts or boxed beef prices.

### Conclusions and Implications

Carcass discounts have a significant effect on net grid prices. AMS-USDA reports carcass premiums and discounts weekly. From these data, seasonal patterns for two of the most important carcass discounts (Select vs. Choice and yield grade 4/5 vs. yield grade 3) can be determined. The seasonal pattern alone can affect net grid prices for cattle with different carcass characteristics.

Forecasting or predicting the most important carcass discounts is difficult. Results indicate that seasonal influences and boxed beef prices are most important.

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