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Issues to Consider When Selling Cattle on a Grid or Formula

This NebGuide discusses issues and problems associated with matching cattle to the appropriate market.

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Recently there has been a much greater emphasis on improving the quality and consistency of beef. Cattle producers, breed associations, feed suppliers and beef packers have initiated value based pricing methods. Grid pricing, formula pricing, and strategic alliances are examples of these new value based pricing methods. While these pricing methods may differ substantially in the carcass and management traits they seek to reward or penalize, they all have one common feature: price is established on each individual animal.

The goals of the new pricing methods are to price cattle based on their "true" value to consumers, reduce problems of inconsistency in the final product, and send appropriate market signals to producers. Pricing accuracy improves as pricing moves from a showlist to a specific pen to an individual head basis. However, price variation also increases when pricing on an individual head basis. Cattle are not created equal, or at least do not produce equal carcasses. Each has a different value.

What is the true value of a carcass? Do consumers want only upper choice product? Do all consumers want lean beef? There are different markets for beef and each market places a higher or lower value on certain traits. Some of the grids, formulas and alliances seek to target different consumer markets by placing greater premiums on selected traits and greater discounts on others. The true value of a specific animal is, therefore, dependent upon the target market. To achieve the greatest economic return, it is necessary to match cattle to the market for which they are most suited.

The objective of this Nebguide is to outline some of the issues and problems associated with matching cattle to the appropriate market. The following questions will be addressed: How to choose the best grid? How important is the base price to a grid? Is maximizing the sale price equivalent to maximizing

revenue or profit? What are some of the industry concerns with grid and formula pricing?

Grid Premiums/Discounts and Base Prices

One of the first steps in selecting a pricing grid is to evaluate the premiums and discounts applied to various traits. If you are producing lean cattle, then a grid with significant premiums paid for yield grade 1 and 2 carcasses will most likely be advantageous. However, if most of your cattle have a yield grade of 3 and you typically have several yield grade 4 carcasses in a pen, then a grid with high premiums on yield grade 1 and 2 carcasses may not be as advantageous as a grid with no discounts on yield grade 3 carcasses and only modest yield grade 4 discounts. Similarly, quality grade premiums and discounts may be very important for some pens of cattle and during certain times of the year.

Over time, the premiums for yield grade 1 and 2 carcasses, the upper choice and prime premium over choice, the standard discount compared to select carcasses, and the discounts for light or heavy carcasses have remained stable or fixed on many grids. However, the choice-select spread and the yield grade 4 discount are more variable with many grids and are dependent upon market conditions.

Choosing the best grid for a pen of cattle is more difficult than simply comparing the premiums and discounts of alternative grids with the expected cattle traits. An extremely important consideration is the base price of the grid. Two grids may have very similar premiums and discounts, but the base prices may be calculated or obtained in very different ways. Different base prices have a large impact on the final net price received.

Base Price Considerations

Several issues should be considered when evaluating alternative base prices. Is the base price a market reported cash price or is it a formulated price based on plant averages? How local or regional is the cash price for the base and at what level is the base determined e.g. live weight, dressed weight, box beef? The answers to these questions have important implications to the value of specific pens of cattle, to the efficiency of the market in general, and to the potential for market power and price manipulation.

Base prices for grids in the Texas-Oklahoma panhandle, Kansas and Colorado are often established using the reported live prices for those regions. In Nebraska the base price is generally established using the reported dressed price for Nebraska. Other grids may tie the base price to the Live Cattle Futures price.

It is often the case that the cash price is just a part of a formula to determine the base price. Many base prices are adjusted on a plant-by-plant basis, in response to the type of cattle being slaughtered at that plant. Plant average dressing percentages are used to adjust live base prices to carcass equivalent prices. Generally speaking, if your cattle have a higher dressing percentage than the plant average, you will receive a price premium. Base prices are frequently adjusted for the percentage of cattle grading choice or higher at the plant. Yield grades may also be used in arriving at the base price for the plant. Data from the plants prior weekly kill or the average of the three to four weeks prior kill are used to establish base-lines for yield, quality grade and other specifications.

A simplified example of how differences in plant averages impact base prices and producers net prices for their cattle is displayed in *Table I*. Consider two plants that have the same premiums and discounts associated with quality grades, and both plants are using the same cash price for a reference; however,

the percentage of cattle in each grade differs at the two plants. The base price is arrived at by (1) multiplying the premium or discount by the percentage of cattle in that category, (2) summing these premiums and discounts, and (3) subtracting this sum from the cash market price. The net price for a pen of cattle sold at either plant is arrived at by (1) multiplying the premium or discount by the percentage of the pen in that category, (2) summing these premiums and discounts, and (3) adding this sum to the base price of the plant. (This is the exact formula for one specific alliance. Other grids have different methods of arriving at the base price, but plant differences are just as important.)

Table I. Example of plant averages impacting base prices and net producer prices							
Quality Grade	Quality Pre/Dis	Plant A averages		Plant B averages		Sample pen of cattle	
		Percent	Pre/Dis	Percent	Pre/Dis	Percent	Pre/Dis
Prime	\$ 6	5%	\$0.30			2%	\$0.12
CAB	\$ 3	15%	\$0.45	10%	\$0.30	13%	\$0.39
Choice		55%		45%		50%	
Select	-\$10	25%	-\$2.50	40%	-\$4.00	35%	-\$3.50
Standard	-\$20	0%		5%	-\$1.00		
Base Price = Market Price - Plant Net Premium or Discount Plant A \$111.75 = \$110.00 - (-\$1.75) Plant B \$114.70 = \$110.00 - (-\$4.70)							
Pen Net = Plant Base Price + Pen Net Premium or Discount Plant A \$108.76 = \$111.75 + (-\$2.99) Plant B \$111.71 = \$114.70 + (-\$2.99)							

In the example in *Table I*, the net price for the pen varies by \$2.95 per hundred of carcass weight (cwt) depending on the plant base. With Plant A the price from the formula, \$108.76, is less than the average cash price of \$110 per cwt. However, the net price at Plant B is above the average cash price.

A disadvantage of base prices tied to plant averages is that the "true value" of a pen of cattle is now relative to the plant average and not an absolute based on the quality of the pen. In addition, from a market efficiency point of view, there are different market signals being sent to producers, for producing a similar product. This creates an inefficiency in the market place, and will impede the efforts of the beef industry to improve the quality and consistency of their product.

The preceding discussion has raised several issues regarding the importance of base prices and the impact on net market prices. Producers need to know how the base price is determined for the grid or formula on which they intend to sell.

Matching Cattle to a Grid

Once the premiums and discounts are known and the base price is known for a grid or formula, the next set of questions to answer is: Do your cattle naturally fit the grid? Can they be fed to fit the grid? Can they be sorted to fit the grid?

Cattle have a natural end point to which it is most economical to feed them. This end point will vary by frame size, breed, genetics within a breed, and market prices. For example, one pen of cattle may finish with an average 850 pound, select, yield grade 2 carcass and another pen may finish with an average 700 pound, upper choice, yield grade 3B carcass. With the first pen, a grid that pays a premium on yield

grades 1 and 2, has no or a small discount on select carcasses, and does not penalize heavy weight carcasses will likely be advantageous. For the second pen, a grid that pays a large premium for upper two-thirds choice and prime, does not discount yield grade 3B carcasses and has a relatively small discount on yield grade 4 carcasses will likely be advantageous. However, as noted in the previous section, the base price calculations for each grid could alter how profitable it is to sell on that grid.

If cattle are not naturally lean, can they be fed and managed to fit a grid that rewards leanness? If cattle do not naturally grade choice or higher, can they be fed and managed to fit a grid that rewards high marbling cattle?

Maximizing Price vs. Revenue vs. Profit

In answering the two previous questions, it is necessary to distinguish between maximizing the price received, the revenue received, and the profit earned for a pen of cattle. Receiving the highest price doesn't imply the greatest revenue, nor does the greatest revenue imply the largest profit. Revenue is equal to price multiplied by weight, and profit is equal to revenue minus feeding and initial costs. To maximize profit on a pen of cattle, selling weight and feeding costs need to be considered, in addition to selling price.

Consider a pen of cattle that if fed for the normal number of days on feed would finish with the majority of the carcasses at yield grade 3 and about 60 to 65 percent choice or higher. If these cattle were fed for fewer days and marketed on a grid that rewards yield grade 1 and 2 carcasses, what would be the likely result? There would most likely be more yield grade 1 and 2 carcasses, the cattle should still grade 55 to 60 percent choice, and it is likely that the net grid price would be higher than the cash market price. The grid worked; the cattle were sold at a higher price. But what about revenue and profit? Feeding for fewer days would result in selling lighter weight carcasses. Revenue is equal to price multiplied by weight. Two weeks fewer days on feed would probably reduce carcass weight by 25 to 35 pounds. If the carcass price is \$100 per hundred weight, revenue would be reduced from \$25 to \$35 per head due to the lighter weight. If the net grid price was \$1 to \$2 per hundred weight higher than the cash price, and the average carcass weight was 750 pounds, the grid would increase revenue from \$7.50 to \$15 per head. The combined result is a reduction in gross revenue of \$10 to \$27.50 per head. Depending upon feed prices and consumption, feeding costs would likely decline by \$20 to \$30 per head. Therefore, profit could have been reduced by as much as \$7.50 per head (\$20 less feed - \$27.50 less revenue) or increased as much as \$20 per head (\$30 less feed - \$10 less revenue) in this example. The point is that producers need to consider more than price when changing the feeding program to fit a grid. It should be noted, the higher the general carcass price, the more critical the carcass weight becomes.

A similar analysis needs to be done if a producer is considering feeding cattle longer than normal to improve quality grade for a grid. Normally, the quality grade may not increase that much and there will be a larger number of yield grade 4 carcasses and fewer yield grade 1 and 2 carcass. There also may be some heavy weight carcass, and feeding costs will definitely increase. All of these factors need to be considered to determine if profit has increased or decreased.

Sorting

Can or should pens of cattle be sorted to fit different grids or sorted to sell some cattle on the cash market? Sorting cattle to fit different grids may be economical provided a producer has a good idea how the different sorts of cattle will look with the hide off. Sorting out junk cattle and mixing them with a pen that is sold on the cash market for the average market price is a short-sighted approach to marketing. Profits will be increased with that sort, but if the practice continues, the average cash market price is

likely to decline. Additionally, it will delay the time for the industry to eliminate or reduce poor quality cattle and may lead to further losses in beef market share and lower fed cattle prices. However, if cattle can be sorted earlier in the feeding period based on knowledge of past performance, carcass EPD's, or by ultra-sound or other measures, then they can be fed and managed to meet the specifications of different grids. This practice could reduce feeding cost, increase returns, and enhance profitability in the short and long run.

Implications for the Beef Industry

As there are more available alternatives, pricing fed cattle is becoming more complex. There is not one "best" pricing method for all cattle all of the time. In fact, the most profitable pricing method will depend on cattle type, market prices, grid premiums and discounts, and base prices for the grids. It may be difficult to know based solely on visual appraisal which pricing method to use.

There will be winners and losers from the new marketing environment. A producer who has cattle that are better than average, particularly better than the plant average for a grid, and that fit a specific grid, may see net returns increase by \$25 to \$50 per head. Likewise, producers of poorer quality cattle - cattle that don't grade well, have a lower dressing percentage, have more dark cutters, hard bones, etc. - will likely see returns decrease by over \$50 per head.

Implications

If a significant number of producers begin sorting cattle and selling the higher quality cattle on a grid or formula and the lower quality on the live weight market or in-the-beef, then what are the implications for the quality and hence the price in the live or in-the-beef market? If packers identify a quality difference between formula priced cattle and live weight priced cattle, then they will obviously try and purchase the live weight cattle for a lower average price. Good quality cattle that are sold on a live weight basis will likely receive this lower average price. Would this then encourage all the higher quality cattle to be sold on a grid and only poor quality cattle to be sold on the average cash market? What will the average cash price then represent? These are some pricing issues that need further discussion.

As pricing moves away from pricing all cattle on a showlist at one price, to pricing each individual pen, to pricing each individual animal on a grid or formula, pricing accuracy should improve. Consumer signals for various product traits should reach producers in a more direct manner. Overall efficiency in the beef industry should improve if cattle are fed and targeted for the market to which they have the most natural fit.

Additionally, cattle producers will need to know how their cattle will look with the hide off. Knowing carcass characteristics is essential for choosing the most profitable pricing method and for those producers who are looking to make changes in their herd genetics or management practices.

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