

CO-PRODUCTS FROM THE STEER'S VIEW

Evan Vermeer, Quality Liquid Feeds, Inc.

Co-product is a relatively new term to the cattle feeding industry. This class of feeds includes the products left over from the production of ethanol or other products for human use from corn or other grains. Co-products are breaking on the cattle-feeding scene in the upper Midwest in a big way recently. For many years, the industry has been using corn gluten feed and steep water from ethanol production plants. These are classed as wet mill plants as the corn is soaked before grinding and processing. These plants have the ability to make several edible human products as well as ethanol such as starch, sweeteners, oils, etc. The gluten and steep products are very different from the output from dry mill plants. These dry mill plants grind the grain before soaking, hence the name. Dry mill plants are cheaper to build but are geared for strict quality control for the ethanol with everything else produced being the byproducts. These by-products are called co-products and consist of wet distillers grains and CCDS or solubles or syrup.

For this discussion, we will focus only on those products that result from the dry mill process, as they are the newest, least known, and are becoming available in increasing quantities. We will attempt to look at how to make money feeding these products to cattle. In other words, let us look at using these products to enhance our cattle operation and not just use them because they are readily available.

As stated earlier, the dry mill plants main focus is on quality ethanol. This means that historically, the feed products left have been truly by-products and therefore have not been produced with any quality control processes. We have seen widely varying analyses and this has made the products somewhat difficult to formulate into a ruminant diet. Recently, the production facilities have begun to focus on the quality issues of the by-products and this will enhance the values to cattle feeders.

Consistency of feed ingredients and thereby the final diet is a critical issue when trying to maximize performance in the feedyard. We must strive to feed the rumen the same amounts of the same diet each day if we expect the fermentation process in that rumen to produce maximum results, i.e. good gains and conversions. Lack of consistency in feed ingredients in a feedlot diet lead to poorer performance at best, or major problems such as acidosis at worst.

The problems facing the feeding industry today when trying to evaluate the co-products begin with the fact that there is limited research on the wet grains and CCDS. Iowa State University and South Dakota State University have done a handful of trials and are continuing to do research work. Most of what we know about feeding values of co-products has been generated in these two places and that is the information that will be used for this discussion.



The limited research we have is very interesting. The energy value of the co-products seems to be greater than that of corn. Trials done show the energy to be 120% of corn and higher. That certainly raises some interesting questions dealing with the reasons for the energy. There has been speculation but no proof. It could be the fat, as the co-products are approximately 10% fat on a dry basis. It could be:

- that the fermentation process increases the digestibility of the leftover products.
- the yeast and bacteria left in the co-products enhance total ration digestion in the animal.
- another reason not yet known.

Interestingly, the energy values of dried grains and grains plus solubles, seem to be considerably lower than the wet products. These energy values are probably equal to or slightly less than corn. It seems that the heat for drying burns away some calories as well. NRC published energy values for distillers grains are similar to corn and reflect those for dried products.

The protein portion of the co-products is quite high, up to 30% on a dry basis. This protein seems to be of good quality as well. This adds value to the product. Since a significant portion of the protein is UIP or bypass, there are some questions remaining when we balance feedlot diets. These questions deal with the amount of UIP vs. DIP we want in cattle rations.

What we think we know today about maximizing values of the co-products is summed up as follows:

1. The products must be consistent in analyses, especially in moisture and protein as those are the two high value areas. The numbers being quoted as standards are 30% dry matter and 30% protein. We will use those for value estimates.
2. When using wet distiller's grains, 12 to 16% of the dry matter of the diet or 8 to 11 lbs. per head per day seems to be the range of peak performance and return.
3. When using CCDS or syrup, 4 to 5% of the dry matter of the diet looks to be best or 3 to 4 lbs. per head per day.
4. CCDS seems to have a slightly higher energy value on a dry basis than wet grains.

According to numbers published by Iowa State University, when all of the above factors are in place, the value of wet grains when corn is \$2 per bu. is in the mid \$30's per ton range and CCDS ranges up to \$40 per ton.

However, there are other cost factors to consider which include shrink, mold loss, handling costs, inventory costs, and a possible difference from research application to field application. These costs will vary from feedlot to feedlot depending on facilities and abilities. These costs must be subtracted from the above values and then you have a breakeven cost for the use of the co-products. Actual purchase price should be less yet if there is a profit to be made with the use of these products in our feedlot diets.

In order to calculate, we should probably figure our breakeven purchase price as suggested above and then subtract a number to tell us how the steer will make money with the co-products. If the products are fed according to the amounts stated earlier in this article and the products are purchased at our breakeven costs less \$5 per ton then we can profit as follows in our feeding operation:

1. wet grains will return \$5 per calf and \$3.50 per yearling
2. CCDS will return \$2 per calf and \$1.50 per yearling

There are other factors to consider when evaluating the use of co-products. I will call them inherent values. They are not nutritional, but because of the nature of the products they affect rations.

If your feedlot diets are quite dry and made up mostly of hay and drier corn, you can probably enhance intake by conditioning your ration with one of these wet products. If intake can be raised, the value of the product to your cattle might be increased substantially.

In addition, any time we replace starch in a feedlot diet with an alternate source of energy, we will have a ration that is less explosive and easier to manage in our bunks. We could call that a safety factor.

If your diets are already quite wet, probably made up of silage and wet corn, then you may end up with a diet that is so wet it could depress intake. Wet diets can also freeze in the bunk in severe winter weather and this will depress intake.

Another consideration when using wet co-products that also may be warm or hot when fresh from the plant, in feedlot diets is the source of urea. Dry premixes containing urea may suffer from urea breakdown and ammonia release thereby reducing feed intake.

A last thing that may affect the feeding of wet co-products to cattle is the possible demand by other animals for the products. Dairies are a major market and large dairies seem to be springing up all over. There is research at present taking place in swine and poultry. If research determines co-products are valuable in these two species and are worth more to them than we as an industry can pay, we will not see the use in cattle.

As we summarize, we can say that the upper Midwest is sitting on a potential golden opportunity for the cattle feeding enterprises. The co-products could well have good value and be purchased at a value that will enhance the cost of a pound of gain on cattle. We will use them for now as best we know how. The bottom line is that we need more research and we need to get a better handle on the use and value of these co-products from ethanol production.