Corn Silage by the Numbers...
"Increasing the Net Value of Corn Silage"

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Should producers consider more corn silage? There may be a variety of reasons for doing so; the biggest one being the price of feed, especially corn. Another reason to consider corn silage may be the maturity of the corn crop at harvest and the desire to capture as much value per acre as possible; or perhaps the feed supply is running short and feed will be needed before grain harvest. Whatever the reason, corn silage is playing a bigger role in cattle diets of all types.

How does one put a value or price on corn silage? The rule of thumb has been 10 x (price of bu. of corn) = price of a ton of corn silage delivered to the silo or bunker. But many factors can affect the ***net value*** of corn silage. For this example, an increment of 1,000 tons of corn silage in bags, silos, bunker or pile is used. Today, the starting price is $65/ton.

Silage is preserved due to fermentation of sugars and starches, which creates lactic acid and drops the pH of the silage to a stable 4.0, or slightly lower. As long as the silage is maintained air tight, the silage will last a long time (silage has been stored in glass containers for more than 10 years and is as stable as the day harvested). But fermentation has a cost in the range of 5-10%. This increases the true cost of corn silage to $68-$72. If the silage has been harvested too dry, poorly packed or not covered quickly, fermentation losses could exceed 20% or more. Thirty days later you have either 950 tons of $68/ton silage or 800 tons of silage that now costs $81.25/ton, which equates to a loss of over $10,000. But DM losses are not all the same and are not equal to the price of the starting material. Fermentation utilizes sugars and starches, not fiber, so the actual cost of lost DM is greater than $65/ton, more like $200/ton.

How are corn silage hybrids chosen? While this might be a question for a different time of year, it is a good time to start thinking about it. Harvest is a good time to assess yields and agronomic success and then compare that with forage analyses.

Figure 1. Relationship between milk/ac and milk/ton of corn hybrids *(Joe Lauer, University of Wisconsin).*

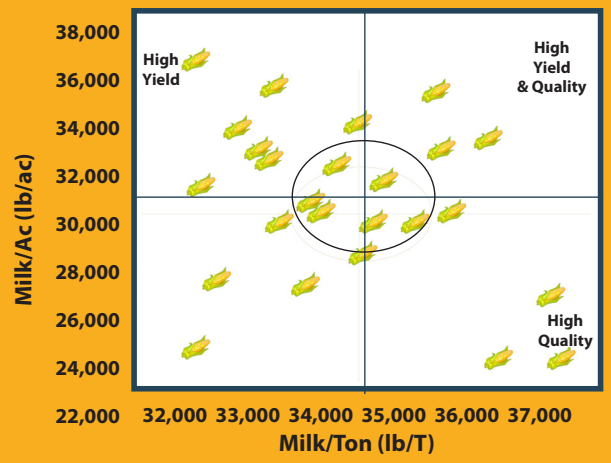
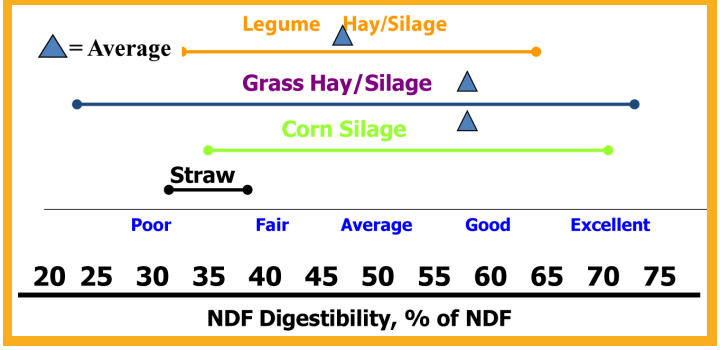


Figure 2. Forage NDF digestibility *(Pat Hoffman, University of Wisconsin).*



Should silage-specific hybrids or dual purpose hybrids be chosen? Silages are ranked by milk/ton or milk/acre. Choosing hybrids that consistently rank in the upper right quadrant will be more profitable not only from a yield standpoint, but also in terms of livestock productivity (Figure 1). These hybrids add value to corn silage; as much as 10% above average. An extra $300-500 gross income/ton of silage DM is possible. NDF digestibility varies and is a key factor in Milk 2006 calculations. Corn silage NDF digestibility greater than the average of 58% is not difficult to achieve with silage-specific varieties. BMR varieties will excel in NDFD and milk/ton.

How much corn silage is fed per day? Is storage structure size calculated in relation to how much is fed or does there seem to be a disconnect between the two? Amount removed/day from the face or surface is very important in order to minimize feed out losses. Feed out losses are caused by secondary fermentation when silage is exposed to air, rain, snow, or wind. Well-packed silage minimizes surface exposure because packing eliminates any air passages. Upright silos are good for minimizing surface spoilage and heating. Typically, a 10' bag also reduces spoilage because enough silage is fed and removed every day. Piles and bunkers are more of a problem; greater thought needs to be given to pile and bunker sizes so that a minimum of 6" is removed from the whole face daily. A spreadsheet is available to help producers calculate the appropriate size of piles at www.uwex.edu/ces/crops/uwforage/dec_soft.htm. Other numbers to think about are how much DM is fed/

day. Producers should aim for 15lbs DM/ft^3 in the pile or bunker and 65-68% moisture as optimal. A silage facer can prevent an additional 1-3% in DM losses, paying for themselves quickly if more than 1,000 tons of silage is fed annually.

Why forage should be analyzed? Forage analysis reports are a good resource as they provide examples against which producers may compare their own forage tests. Numbers to pay attention to when reviewing a report are: NDF %, NDFD %, lignin and lignin % of NDF, starch and sugar %, as well as DM/moisture and pH.

Newer tests also evaluate starch digestibility. It is known from animal performance and laboratory analysis that all corn is not the same in rate and extent of starch digestion. Eventually, it is hoped that this information will help producers select hybrids of greater value. In the meantime, it is suggested that producers have enough corn silage harvested to carry over at least 3 months before starting to feed it. Dairyland Labs has shown that starch digestibility will improve by 5-10% over a 6 month period, with the greatest improvement coming in the first 3 months.

The net value of corn silage is dependent on more variables than just the price of a bushel of corn. Value can be lost or gained through hybrid selection, harvest and storage management, and feed out. Demand for corn, and the resulting high feed prices, make it critical to increase the net value of corn silage.