# Selecting Top-Performing Corn Silage Hybrids

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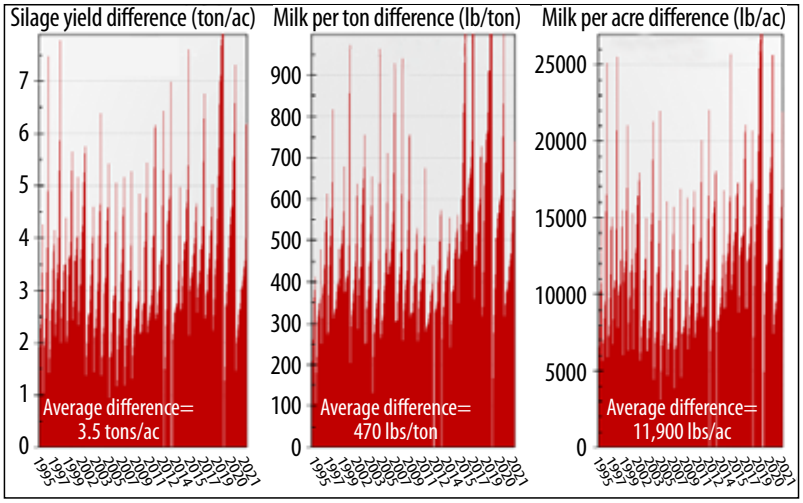
Selecting the proper corn hybrids for your silage fields can often mean the difference between profit and loss for a farm operation. Corn hybrids must be agronomically sound and resistant to disease and insects. Good standability allows flexibility at harvest if a field is passed over and left for grain harvest. Characteristics that describe a good forage include: 1) high yield, 2) high energy (high digestibility), 3) high intake potential (low fiber), 4) high protein, and 5) proper moisture at harvest for storage. Except for high protein, corn silage achieves these characteristics well. However, the ultimate test is how a forage performs within an animal.

Through the years, University of Wisconsin (UW) has used various models to estimate animal performance and rank hybrids. Initially, Milk91 (based upon ADF) was developed to rank forages for potential animal performance. This model evolved to Milk95 (based upon NDF), then Milk2000 (which used NDF, NDFD, and starch), and finally Milk2006 (adjusted NDF, NDFD, and starch). Other models include the Cornell model (uNDF of 240 h) and another UW model using TTNDFD. Currently, Milk2006 is used to rank hybrids in the UW hybrid evaluation program and other management decisions for predicting animal performance. However, the National Research Council has recently updated dairy cattle feeding guidelines, which will likely require adjusting Milk2006.

**Figure 1.** Corn silage yield, milk per ton, and milk per acre difference between the highest and lowest hybrid in a trial. Data derived from UW performance trials conducted between 1995 and 2021. (N= 47,388 plots in 460 trials)




Grain in corn silage is ~45-50% of the dry matter (DM). Average starch is ~30% of silage DM but can be quite variable due to interactions of the hybrid with the environment. Starch digestibility is 80-98% and influenced by kernel maturity, kernel particle size, endosperm properties, and silo fermentation.

Stover in corn silage is ~50-55% of DM. Leaves, stalk, and the cob-shank-husk typically account for 15%, 20-25%, and 20% of silage DM, respectively. Average NDF is 47% of DM. About 40-70% of the NDF is digestible (NDFD) and is influenced by hybrid, maturity, cutting height, and silo fermentation.

Diet energy in corn silage is impacted largely by carbohydrates in fiber and starch. Fiber is always lower energy than starch (grain). A 2-3 unit drop in fiber or starch digestibility will decrease milk by ~1 lb.

Since 1995, UW has evaluated corn hybrids for silage. We have conducted 460 trials across 47,388 plots. The average difference between the top- and bottom-ranked hybrids in a trial has been 3.5 tons DM/ac (Figure 1). Silage yield may be the least controversial measure for corn silage performance since it is a straightforward measurement. Estimating animal performance may be more controversial. The average silage milk per ton difference between the top- and bottom-ranked hybrids has been 470 lbs milk/ton. The average silage milk per acre difference between the top- and bottom-ranked hybrids has been 11,900 lbs milk/ac. Even if milk per acre estimates were halved, clearly hybrid selection is an important economic decision for dairy profitability.

The criteria for selecting corn silage hybrids should be based upon whole plant silage yield, grain yield (allows flexibility and dual purpose), silage quality (both starch content and fiber digestibility), relative maturity (5-10 days later than grain hybrids), standability (allows flexibility at harvest), and pest resistance. The overall conclusion is that variation for silage yield and quality exists among commercial hybrids in Wisconsin.

Increasingly, corn hybrid selection dictates the management options available to a farmer. The approach for selecting corn silage hybrids in the bio-engineered era in which we are currently living include: 1) using independent yield trial data of multi-location averages, 2) evaluating consistency of performance, 3) evaluating every hybrid individually – it must stand on its own for performance, 4) paying attention to seed costs, and 5) buying the bio-engineered traits you need. Traits do not add to yield … traits protect yield.