Fiber Digestibility

Fiber digestibility is an important characteristic of corn silage. It is measured using a technique called Neutral Detergent Fiber Digestibility (NDFD). Higher NDFD is often associated with higher dry matter intake and milk production, especially in high producing animals. In one study, a one-unit increase NDFD was associated with a .37 lb/d increase in DM intake and a 0.55 lb/d increase in fat-corrected milk yield. NDFD is an important characteristic used to estimate the potential milk/ton in the Milk2006 equation.

Often there is a about a 5 unit range in NDFD among conventional corn hybrids when averaged over multiple locations as we present data in the PDMP trials. BMR hybrids will often have NDFD levels that are significantly higher than conventional hybrids. In our 2007 PDMP trials, for example, the BMR hybrids in our Medium maturity test for example, the NDFD of two BMR hybrids averaged 64.8%, while the average of 26 conventional hybrids was 55.0% or about 10 units. Theoretically, this difference could result in a milk production difference of 5.5 lbs of milk per day.

Some hybrid testing programs in other states report similar ranges among conventional and BMR hybrids for NDFD, but some report larger differences between conventional and BMR hybrids. This is likely due to differences in analytical methods, not to variation in how the hybrids respond to each environment.

The variation among hybrids can be influenced by the laboratory methods that are used in the analysis. Samples can be analyzed using different length of incubations (24, 30 or 48 hours for example), using wet chemistry or NIR techniques, and there can also be variations among laboratories in the specific wet chemistry procedures that are used. In the PDMP testing program we use a 30hr incubation that is predicted using NIRS by Dairy One, who does the analysis for the program.

We conducted a study to evaluate the impact of incubation time and NIRS on the ranking of hybrids and the variation among hybrids. In that study, using NIRS resulted in a similar ranking of the hybrids, but the range was reduced by about two units compared to wet chemistry methods. NIRS offers advantages in turnaround time and cost compared to wet chemistry methods.

We are continuing to work with Dairy One to make sure that the NIRS calibration is accurate and representative of the differences that exist among hybrids.