



# Connecting corn silage quality to performance

by Mike Rankin

**F**ORAGE quality is often discussed and written about. Often, through experience, we understand improved fiber and starch digestibility to mean more energy available per pound of silage fed. Although, translating forage analysis and quality results with actual dairy or feedlot performance is sometimes difficult. It's like speaking a new language.

I've now listened to and read hundreds of talks or articles citing the Oba and Allen NDF (neutral detergent fiber) digestibility relationships with dairy intake and production as reported in 1999. Oba and Allen observed that a 1-percentage unit improvement in NDF digestibility (NDFD) corresponded to about 0.38 and 0.50 pounds of intake and milk gains, respectively. This study is exceptionally well received, yet it's now over 20 years old and the relationships may be different with today's genetics and management.

## Look to feed efficiency

Beyond intake and milk production, dairy or feedlot performance can be defined by other key performance indicators such as feed conversion efficiency. Recently, I've shifted the focus in my presentations and articles to discussing the topic at hand relative to feed conversion indicators.

In today's economic climate, using key performance indicators that incorporating feed conversion efficiency are better associated with farm economic performance. For example, in a recent financial benchmarking exercise using feed cost and dairy performance data

summarized by Stacy Nichols with Vita Plus Corporation technical services, we observed two dairy farms with nearly equivalent energy corrected milk (ECM) per cow differed by nearly \$1.50 per cow in total feed costs per hundred-weight (cwt.) of milk shipped.

These farms differed due to a difference in feed conversion efficiency (FCE) of 1.84 and 1.62, respectively. Feed conversion efficiency is determined by dividing the pounds of ECM produced by the pounds of dry matter intake.

At about 98 pounds of ECM per cow, both dairies could have been considered high performing if strictly interpreting production per cow; however, with margins per cwt. cycling back and forth between the red and black, even 25 cents per cow in feed costs per cwt. can prove pivotal and mean the difference between profit or loss. Feed conversion efficiency better describes the vast difference between these two herds in economic performance.

Connecting forage quality with dairy performance, recent dairy case study results I presented at the Midsouth Ruminant Nutrition Conference offer us a glimpse of how fiber digestibility can improve performance for today's commercial dairy. In the case study, I related fiber digestibility measures for corn silages sampled to dry matter intake, milk production, and feed conversion efficiency for over 50 commercial dairies in Wisconsin.

The observations were striking in that the corn silage NDFD and uNDF (undigestible NDF) relationships alone with animal performance appeared to

be significant. The results should be interpreted with caution as this was not a controlled experiment.

However, the survey results suggested a one-unit improvement in corn silage NDFD30 or TTNDFD (total tract NDF digestibility as a percent of aNDF) were related to a 0.45 and 0.62 pound boost in DMI (dry matter intake,  $P < 0.01$ ) and a 0.98 and 0.78 pound rise in ECM ( $P < 0.05$ ), respectively.

## Digestibility makes a difference

Forage uNDF240 (percent of DM) has recently gained attention as a new lignin measure. In the case study, a one unit increase in corn silage uNDF240 appeared related to a 0.60 pound decline in dry matter intake, and 1.29 pound drop in ECM. And last, but most importantly relative to farm economic performance, feed conversion efficiency trended toward a relationship with NDFD30, with a 1 percentage unit boost in NDFD30 trending toward a 0.005 unit improvement in feed conversion efficiency (FCE,  $P < 0.09$ ).

If real, this relationship means that a 50 percent (below average) versus 60 percent (above average) NDFD30 in corn silage equates to a 0.05-unit improvement in ECM feed conversion efficiency. And at today's feed costs, this translates to roughly 20 cents per cwt. in reduced feed costs.

The case study observations for corn silage discussed here are directionally in line and numerically greater than those published nearly 20 years ago by Oba and Allen. This may mean that today's dairy cattle respond even more to improved forage quality.

If corn silage quality is a hot topic for your farm, take these observations to heart and discuss the potential impact for your farm with your consultants. Project performance gains against higher seed and crop production costs per acre.

Finally, consider using the recently released University of Wisconsin Extension seed corn partial budget tool available for download at [bit.ly/HFG-calculator](http://bit.ly/HFG-calculator). ●

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