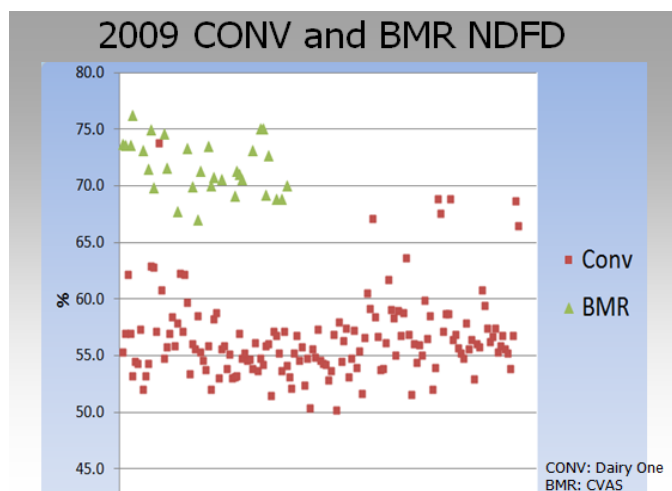
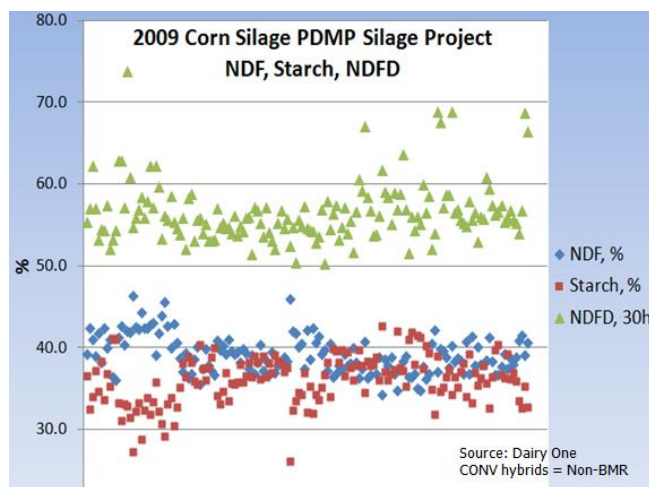


Corn Silage Discussion Summary – 2009 Nutrient Content and Digestibility

Forage fiber is not created equally. That's right, neutral detergent fiber (NDF) – the best predictor of how a dairy cow performs – is as variable a plant component as you can imagine. Cows utilize the NDF that is in grasses, legumes, and corn silage differently. While all cows possess the same digestive machinery and rumen microbes, the actual digestion of fiber is dependent on the source of the fiber. We know more about forage NDF than ever. We know how to measure NDF digestibility; and, what to change in the ration to help the cow react to it.

The components of NDF -- cellulose, hemi-cellulose, and lignin -- for the most part, 'regulate' digestion. NDF is not digested completely; of what's available, roughly 70 to 85% of NDF is digested in the rumen. Cows require 0.9 to 1.2% of their body weight as 'true' forage NDF – NDF from corn silage, haylage or hay. Simply put, cows need forage NDF to chew, ruminate, and remain healthy.

The PDMP corn silage project provides us with an abundance of information on corn silage hybrids. We measure many nutrients; up to now we've focused on NDF, NDF digestibility (NDFD), and starch. NDFD is a valued tool when formulating dairy rations. Our analysis of NDFD represents digestion after 30 hours of ruminal fermentation -- hence, the term NDFD30. This year, both BMR and Non-BMR hybrids were examined:



For 2009, BMR hybrids contained 68 to 75% NDFD and CONV (non-BMR) hybrids 50 to 60% NDFD. So, why are NDF and NDFD so important?

- ✓ Proper rumen function depends on forage NDF and digestible NDF (dNDF).
- ✓ Forage NDF promotes chewing and regulates passage rate.
- ✓ Digestible NDF regulates rumen pH and promotes the VFA's acetate and butyrate, precursors to milk fat synthesis.
- ✓ The digestible NDF "pool" is a significant energy source for cows.
- ✓ The take-home message is test your forages for NDF and NDF digestibility. Not knowing these values will put cow health and productivity at risk.

We had the ability this year to test BMR and non-BMR hybrids at both Dairy One and Cumberland Valley Analytical (CVAS). Results were very comparable between both labs:

Hybrid	DM, %		NDF, %		NDFD, %	
	Dairy One	CVAS	Dairy One	CVAS	Dairy One	CVAS
BMR or <u>Conv</u>						
Mycogen F2F622	28.0	29.2	41.7	42.2	66.4	69.8
Mycogen F2F725	26.3	27.5	41.3	39.1	68.6	71.9
Mycogen F2F797	24.8	26.2	42.7	43.4	70.8	70.5
LICA UFO105B6	30.5	32.6	40.9	39.9	63.6	68.9
mean	27.4	28.9	41.7	41.2	67.3	70.3
<u>Growmark</u> FS 6296VT3	29.1	30.1	41.2	40.9	54.8	57.9
Mid-Atlantic MA9150	27.4	29.1	42.3	41.0	59.8	63.3
Monsanto Co <u>Dekalb</u> DKC61-69	31.2	32.8	37.6	37.8	54.0	59.6
TA Seeds TA689-00F	29.9	31.0	43.4	43.6	54.0	56.8
mean	29.4	30.8	41.1	40.8	55.6	59.4

NDF content was nearly identical between labs; average NDFD differed by only 3 percentage units for both BMR and non-BMR hybrids, well within the expected variation for NDFD. Bottom line: both labs adequately characterized BMR and non-BMR hybrids. We hope to use this information as a springboard into next year's planning. An advisory committee to the PDMP project will meet on December 15, 2009 to put forth ideas for the 2010 project.

In closing, forages contain NDF that digests differently. We've done an excellent job at characterizing NDFD for corn silage. And, quite frankly, today's corn silage hybrids possess much more digestible NDF than earlier hybrids. There are clear differences in NDFD between BMR and non-BMR hybrids. Yield of NDFD should be considered, however. As I said, digestible NDF can be a large energy pool for dairy cows. The trick is to understand how all the NDF sources fit together in a ration. My advice:

- Plan accordingly. Mix and match NDF sources to optimize health and production.
- Sample corn silage and test it frequently for DM, NDF, NDFD, and starch.
- Always take steps to maintain rumen (and foot) health (enough forage NDF).
- Do not assume all NDF is equal – it's not.