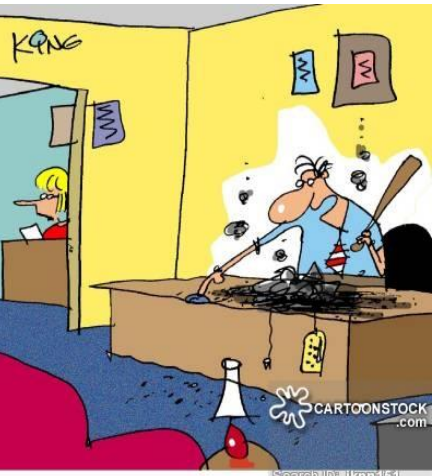
NDS Dynamics

April 2015
Volume 3 Issue 1

Inside This Issue



"Miss Johnson, would you mind ordering me another computer? And you can cancel that call to tech-support."

Don't be like this nutritionist, just drop us an email or give us a call!!!
Our contact info is at the end of the newsletter!

Welcome to NDS Newsletter

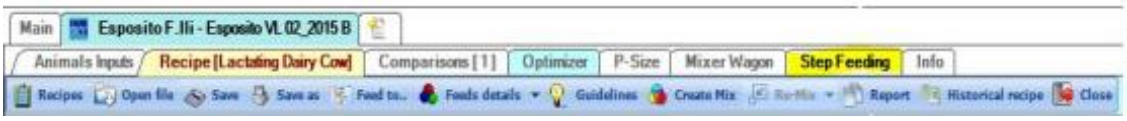
By Rachel Eickman
NDS-NA Staff

Thank you for taking time to read our Newsletter. In our busy life it is the investment of time which is so precious. David is putting the finishing touches on some video tutorials that will be available on our new Youtube channel **RUMEN NDS**. So please take a minute and check out the channel!

NDS - Milk Step Feeding Tool

By Ermanno Melli
RUM&N Sas Research & Development

Even though the Total Mixed Ration (TMR) dominates the feeding systems today, and it is the most widely used system, there are still a significant number of dairies that do not feed Total Mixed Ration. They adopt different feeding systems, like the Partial Mixed Ration (PMR) or the Component feeding in the herds that feed forages and grain/concentrates separately. These herds feed grain in the stanchion barn, in the milking parlor as the cows are being milked or through automatic feeders. Moreover, with the advent of Automatic Milking System (AMS) or robot milking, it has become essential to be able to correctly manage at least a portion of the grain separately from the base ration that normally consists of PMR. These reasons, and the fact that the separate feeding of grain allows producers the opportunity to feed cows according to their level of production and to manage the amount and quality of grain that the cow is consuming, convinced us to develop the NDS – Milk Step Feeding tool.



Note: Ermanno and his team did a great job with this new tool and you can read the rest of the article on the online Manual or on the 'Update description' in your NDS program. There you will find how to setup and run step feeding, feeds that can be included, min and max for feeds, manual adjustment of the data, feeding heifers vs mature cows and how to customize a feeding report.

Evaluating Diet Fermentability in NDS

By Dr. Buzz Burhans, Dairy Tech Group

As a practicing dairy nutritionist, I use NDS because it is hands down the best implementation of the CNCPS model. In addition to an excellent implementation of the CNCPS model, the NDS platform provides a large number of tools and features that are useful to practicing nutritionists. These tools and features reflect the fact that the developers of NDS, RUM&N Sas in Italy, are themselves also practicing dairy nutritionists, not only programmers, and they regularly use NDS in their own consulting work. In this newsletter I would like to spotlight one of these features that demonstrates these aspects of NDS. This article will focus on CNCPS estimates of ration fermentability, and the section of the NDS ration screen that facilitates a nutritionist's assessment of those parameter estimates. NDS printed reports can also include fermentability.

The Fermentability section is at the bottom center of the main NDS ration screen, and it can inform ration evaluation. The section is visible when the sections with the diet evaluation tab(s) at the screen bottom right quadrant are minimized/closed. In the graphic below screenshots are shown of two real and actually implemented rations, with two very different formulation strategies; DMO-W (left side) being a western herd in Idaho, and DMO-E (right side) being an eastern NY herd. When evaluated both herds were milking reasonably similarly (DMO-W ~82 lb., DMO-E ~ 85 lb.), and both had very similar components at ~3.22% protein, 3.7% fat. The "DMO-W" ration demonstrates a fairly typical "western US" formulation strategy, with predominantly alfalfa hay as the forage, in contrast to the DMO-E which had predominantly corn silage as the forage and reflects a fairly common "eastern US" formulation strategy. Other diet characteristics also reflect typical regional differences: the DMO-W ration is high (excessively so) in crude protein (18.12%) and *low in starch* (16.19%); the DMO-E diet is lower in crude protein (16.46%), and *significantly higher in starch* (25.55%). While the Eastern herd had slightly higher production, the Western herd had a more economical ration cost, slightly higher DMI, and included more byproducts.

DMO-W (West)

DMO Alfalfa Hay W-5 11-6-14	9.080000	8.344520
DMO Alfalfa Hay W-2-A 12-8-14	9.080000	7.963160
DMO Corn Silage 12-26-14	33.000000	9.111300
Straw	1.000000	0.926000
Barley Grain Flakes	14.500000	12.760000
Corn Dist Ethanol	4.900000	4.351200
Cottonseed Fuzzy	6.000000	5.520000
Beet Pulp ID	5.000000	4.550000
Wheat Distillers	3.750000	3.465000
Water	15.000000	0.007500
DMO Mineral	1.098886	1.089739

DMO-E (East)

F	DMO-E Corn Silage 3-11-15 BIG CORN PII	84.482759	24.500000
F	DMO-E New Haylage 1-19-15	20.973782	5.600000
C	Corn Grain 95FAd Ground Fine	8.500000	7.480000
C	Soybean Meal 47.5 Solvent	5.000000	4.500000
C	Citrus Pulp Dry	3.600000	3.188400
M	DMO-E Protein MIx -2-10-15	12.800000	11.496257

Nutrients		DM %	Supply
CP	%	18.12	10.53
Forage	%	45.35	
Forage NDF	%	18.50	10.75
peNDF	%	25.62	14.88
Starch	%	16.19	9.41
Sugar	%	4.87	2.83
Soluble Fiber	%	9.49	5.51

Nutrients		DM %	Supply
CP	%	16.46	9.34
Forage	%	53.03	
Forage NDF	%	23.78	13.50
peNDF	%	23.10	13.11
Starch	%	25.55	14.50
Sugar	%	5.07	2.88
Soluble Fiber	%	4.34	2.46

Days in milk	176.0			
Milk production lbs	82.10	ECM lbs	84.43	
Milk Fat % w/w	3.70	Mean FBW lbs	1,450.0	
Milk Protein % w/w	3.49	3.25 (2.72)	LN	3.00

NCPS | Milk quality | Well-being risks | Performance

	Supply	Balance	% Req.	Milk lbs
ME Mcal/day	62.46	0.09	100.1	82.28
MP g/day	3,283.8	421.1	114.7	101.24
NH3-N g		103.0	155.1	
Forage NDF lbs	10.75	-2.30	82.4	51.6 %NDF

Days in milk	175.0			
Milk production lbs	85.00	ECM lbs	87.10	
Milk Fat % w/w	3.70	Mean FBW lbs	1,375.0	
Milk Protein % w/w	3.44	3.20 (2.68)	LN	2.00

NCPS | Milk quality | Well-being risks | Performance

	Supply	Balance	% Req.	Milk lbs
ME Mcal/day	62.99	-0.47	99.3	84.09
MP g/day	2,936.1	51.2	101.8	90.43
NH3-N g		106.9	165.5	
Forage NDF lbs	13.50	0.83	106.6	75.3 %NDF

	Fermentability		
	% DM	%	% Ferm.CHO
Proteins	9.45	52.2	
Totals CHO	37.49	54.8	
NDF	11.94	33.3	31.85
Starch	13.51	83.4	36.04
Soluble fiber	8.02	84.5	21.39
Sugars	3.62	74.2	9.64
Other NFC	0.40	19.8	1.07

	Fermentability		
	% DM	%	% Ferm.CHO
Proteins	8.91	54.1	
Totals CHO	37.01	53.0	
NDF	10.40	33.2	28.11
Starch	18.79	73.5	50.78
Soluble fiber	3.38	77.9	9.13
Sugars	3.61	71.1	9.75
Other NFC	0.83	23.1	2.24

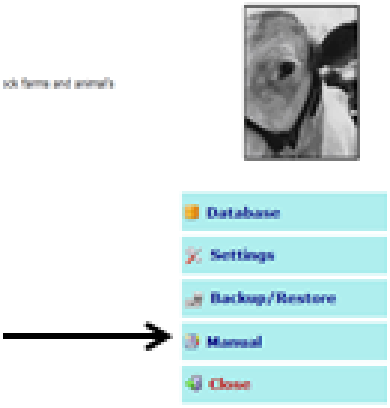
Evaluating Diet Fermentability in NDS Contd.

What struck me when I evaluated these two rations was how different the carbohydrate fractions were, particularly the starch and the forage NDF, and yet both rations were supporting relatively similar production, and cow health in both was excellent. Many of us who were originally trained in the east, especially those who have used CNCPS for many years, might be unlikely to put together a ration like the DMO-W above, not only because the eastern forage base is usually quite different, but also because eastern formulation strategy for carbohydrates is frequently different, especially for starch and dietary forage level. Asked for guidelines about ration formulation, we often speak mainly in terms of NDF and starch content, and to a lesser extent of sugar content or soluble fiber. But notice that in the screencaps of fermentability shown above that these two rations, performing relatively similarly, have very similar total CHO fermentability, but get there using quite different profiles of CHO intake and fermentable fractions.

NDS makes it easier than ever before to be attentive to the fermentability information, which is nicely displayed in clear view at the bottom center on the NDS ration page when the diet evaluation tabs are minimized. Since using NDS, I have become much more observant of the total CHO fermentability, and of the fermentable CHO fractions, as opposed to simply the intake levels of carbohydrate fractions like starch. Note that this particular comparison example does not imply an optimal fermentability profile however. For instance, in Reno at the Western Dairy Herd Management Conference earlier this month Dr. Charles Sniffen suggested that the optimal Total Fermentable CHO amount might be at or above 40% of DM. My experience is that he is pretty close (isn't he usually?☺); if diets I evaluate are much below the 37% shown on these examples they tend not to perform well, a result often mediated by uNDF content; on the other hand, if they are much above 42% or 43% they tend to be too "hot" and have negative effects on butterfat or SARA (these effects being also partially mediated by the peNDF and DCAD content). However, the optimal range may modestly vary between Eastern type ration formulations containing more fermented corn silage with more organic acids versus Western type rations with higher sugar and soluble fiber content from alfalfa as hay (as opposed to haylage), as well as greater byproduct use such as beet pulp. The 40% minimum he suggested may be slightly high for "western" type rations, and perhaps even for many eastern type diets, depending on the profile of CHO fractions. Work by Dr. Larry Chase, professor emeritus at Cornell, has shown that higher byproduct rations with quite low starch content can also be successful in the east. Importantly, rather than simply monitoring changes in ME allowable milk, monitoring the diet total CHO fermentability is helpful in assessing expected performance changes when diets are revised.

Another consideration is that not only is the total CHO fermentability important, fermentability of carbohydrate fractions can also have a big impact on cow performance. Note that in these two diets the total starch content was extremely different (16.4% vs. 25.6% of DM), and the fermentable starch was different also (13.5% vs 18.8% of DM), though less so than the total diet starch content. Also note that the starch fermentability, as a % of the starch, was different in each diet, which is why the fermentable starch, as a % of DM, was not as different as the intake diet starch contents. The typical range of fermentable starch as % DM I see generally runs between 17.5% and 22.5% of DM, with risk of reduced performance below that range likely, and acidosis risk likely occurring above that range. "Likely", but not definite, because, as in the comparison here, other carbohydrate fractions also determine the total fermentable CHO. And total fermentable CHO appears to be a major predictor of both of those potential risks. Unless one was monitoring the total estimated CHO fermentability, one would be unlikely to predict that two diets, with such different starch levels as those in this example, would perform as similarly. These differences also are interesting when the implications of Dr. Mike Allen's "HOT" theory are considered. Differences in starch fermentability can also affect animal wellbeing, and users are encouraged to use the new wellbeing tab to monitor this. More on the wellbeing tab in a future newsletter.

Bottom line: Assessing total CHO fermentability and fermentable CHO fractions can be useful in evaluating and formulating rations for lactating dairy cows, and may provide insights into alternatives that are equally productive, more economical, and advance cow health.



If you run into problems or questions on your way to creating the perfect ration take a second to go back to the main screen and open the Manual section. Here you can find all the PDF Tutorials you can ask for! Who knows, you might even be the genius you think you are and find the answer all by yourself!

NDS-NA wants to welcome Phuc Nguyen to the NDS North America team! Phuc will be our IT for NDS-NA – supporting users with issues installing and hardware use. Phuc has 6+ years of aftermarket support with Industrial Automation in the Ethanol Industry. He can be reached at either ndsrumen@gmail.com or phucus@gmail.com or by calling him at 620-951-5075. His office hours are 10 AM – 5:30 PM CST. Welcome Phuc!!!

NDS-NA wishes Rachel good luck when she goes back to teaching in August! Her talents as a teacher has been a blessing for NDS-NA. Rachel will be starting an Ag program and FFA Chapter in Hebron, NE. Hopefully we can still keep her involved in the newsletter! We wish her all the best!