Dairy One
Forage Laboratory

January 2015 Newsletter

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Read the latest posting:

*Are your cows getting enough water this winter?*

Join us in Reno

AMTS, Dairy One and Adisseo will be hosting a meeting on Tuesday March 03, from 8AM - 1PM (lunch provided), prior to the 2015 Western Dairy Management Conference in Reno, NV. At the meeting CNCPS 6.5 and the lab analyses to support it will be introduced. Limited seating available. Admission $50.

Contact Lynn Gilbert at lynn@agmodelsystems.com to make your reservation.

New for 2015: NIR Pro

We are pleased to introduce our new **NIR Pro** forage testing package to complement the new CNCPS version 6.5 biology. CNCPS 6.5 represents the latest theory in ration balancing and requires new values to drive it. **NIR Pro** is the NIR Prime package modified to include the following features:

* aNDFom - NDF expressed on an organic matter (om) or ash free basis replaces aNDF.
* uNDFom and NDFDom - undigested NDF and NDF digestibility analyzed and reported on an organic matter basis replacing the option of NDFD24, 30 and 48. uNDFom and NDFDom values are reported for 30, 120, and 240 hours. All three values are included and used in conjunction to better estimate the rate of fiber digestion or kd.
* Version 6.5 utilizes the NDFDom30, 120, and 240 and internally calculates the kd using Vensim, a mathematical tool to optimize models with dynamic components. Therefore, kd will not appear when aNDFom and uNDFom are measured and reported.
* Calibrations are available for corn silage, haylage and hay.
* Price: to introduce you to these new concepts, we're offering a special 90 day introductory price of $25/sample good until 3/31/2015.
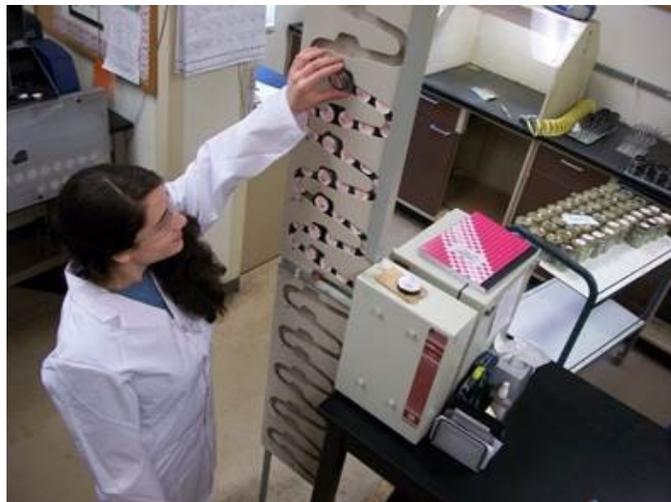
NIR Pro will represent a third tier in our forage NIR line-up, complementing the NIR Prime and Forage NIR. Visit the forms page on our website for new sample information sheets at http://dairyone.com/general-resources/forms/. If your ration software is being upgraded to include the 6.5 biology, this is the package for you!

Interested in saving money on CNCPS 6.5 ration software and forage analysis?

AMTS will be rolling out the updated version of their ration software, incorporating 6.5 biology over the next 90 days. If you're interested in purchasing the latest in ration balancing software, now is the time to buy! For those 90 days, AMTS & Dairy One are offering a joint software/forage analysis package. Purchase AMTS software and blocks of forage analysis together and receive both at a discounted rate.

AMTS licenses	Discount/savings
1 - 4	5%
5 - 14	10%
15 - 24	15%
25 - 49	20%

AND

Blocks of analyses	Price	Savings
100 NIR Pro analyses	$2,375	$125
300 NIR Pro analyses	$6,750	$750

This offer is for NEW AMTS subscribers. You must purchase both software licenses and blocks of analyses in any combination to qualify. For more information, contact Marti-Jo by phone at 607-257-1272 x2156, or by e-mail at Marti-Jo.Russell@dairyone.com, or Caroline by phone at 607-423-9058, or by email at caroline@agmodelsystems.com.

Take advantage today! This offer expires on March 31, 2015.

Why new fiber analyses: A perspective

aNDFom

1960s: NDF is introduced to describe the total fiber content of feed, collectively the hemicellulose, cellulose and lignin. The dried and ground sample is boiled in NDF solution for an hour to remove the unwanted nutrients leaving the fiber residue behind. Various

reagents are included in the solution to wash out the protein, fat, starch, etc. and leave the fibrous residue behind.

1990s: Amylase and sodium sulfite are added to the ND solution to further clean up the residue. Amylase was added to help breakdown the starch in high starch feeds. Likewise, sodium sulfite was added to help remove protein.

Today: It is being advocated that NDF be reported on an "organic matter" or "ash free" basis. Samples high in ash can overwhelm the ND solution and not all of the ash is washed out. The remaining ash is included in the fiber residue, resulting in an overvaluation of the NDF. In these situations, NDF is overestimated and the diets formulated around this value can lead to underfeeding fiber and the problems associated with it (such as off feed, acidosis, or foot problems).

Following the traditional NDF extraction, the fiber residue is ashed at 600C for 2 hours to burn off the organic matter, leaving the ash behind. The residual ash is subtracted from the fiber residue to determine and express the NDF on an ash free or organic matter basis. This will be reported as aNDFom. The data in Table 1 represents a comparison of the conventional aNDF with aNDFom across 100 samples for each feed type. Note that the "hi diff" column represents the greatest difference observed along with the ash content of that sample in the last column.

Table 1. aNDF vs aNDFom

|	avg aNDF%	avg aNDFom%	avg diff	lo diff	hi diff	Ash%
Corn Silage	43.10	42.10	-1.00	-0.36	-3.00	7.85
Haylage	54.10	51.00	-3.10	-0.76	-10.55	20.95
Hay	59.20	56.60	-2.60	-0.88	-12.94	40.26

Most current ration software is based on aNDF and this value will continue to be reported in our regular packages. aNDFom will be replacing aNDF in our CNCPS 6.5 model driven packages (327) NIR Pro and wet chemistry (315) Model Profile.

uNDFom

To be consistent with the utilization of aNDFom, a new series of NDF digestibilites are available on an organic matter basis. For example, the undigested NDF and NDF digestibility determined at 30 hours will be reported as uNDFom30 and NDFDom30, respectively. The NDFDom30 will be used in conjunction with two new digestibilities measured at 120 and 240 hours. Cornell has determined that using these 3 time points will result in a better estimation of the rate of digestion known as kd. In a rate calculation, it is important to know the end point, which in this case is the total undigestible fiber. In previous editions of the CNCPS, this was estimated as a constant (lignin x 2.4). Recent research has demonstrated that this value is best determined as

the undigested fiber remaining after a 240 hour incubation in rumen fluid.

Figures 1. & 2. illustrate fiber breakdown for corn silage and haylage over time. Graphed below is the average for the feed type plus the highest and lowest digestibility for the feed type in the data set.

Figure 1. Corn Silage Digestibility

Figure 2. Haylage Digestibility
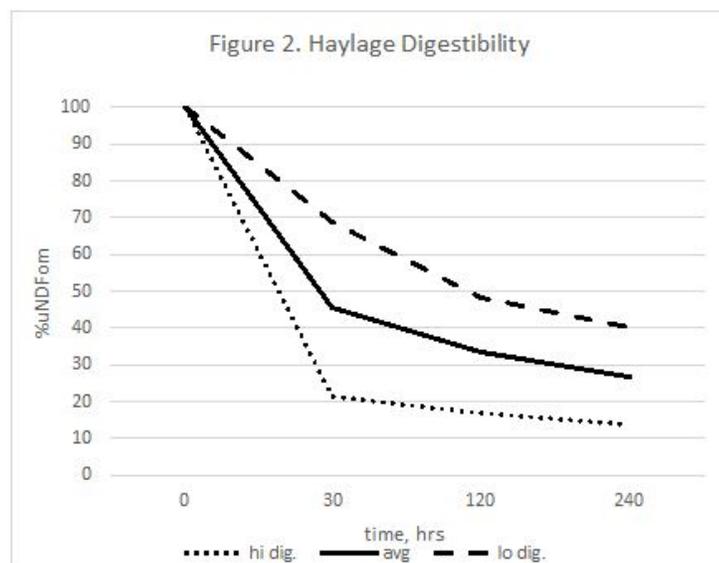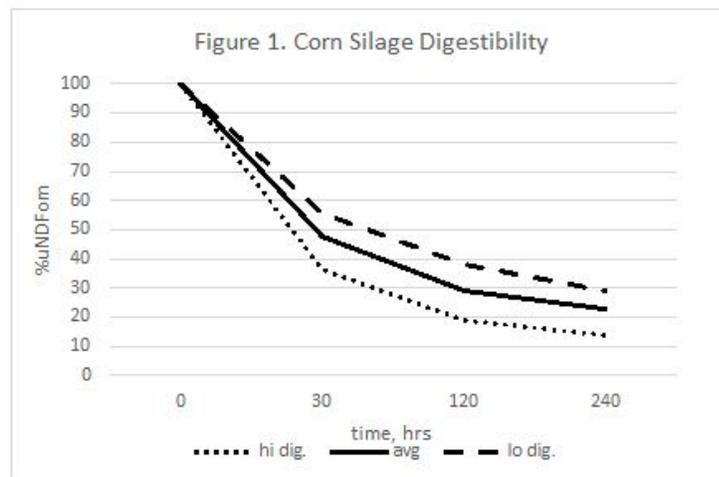
Likewise, the kd for non-forages can now be calculated using NDFDom values measured at 12, 72 and 120 hours. To support the need for these values, we're offering the following wet chemistry packages:

(585) Forage NDFDom $77
Includes: aNDFom, uNDFom and NDFDom at 30, 120 & 240 hrs.

(586) Non-forage NDFDom $77
Includes: aNDFom, uNDFom and NDFDom at 12, 72, & 120 hrs.

Please realize that these are time-intensive procedures and require 2 - 3 weeks to complete.

Additional reading:

Raffrenato, E. and M.E. Van Amburgh. 2010. Development of a mathematical model to predict sizes and rates of digestion of a fast and slow degrading pool and the indigestible fiber fraction. Proc. Cornell Nutr. Conf. p. 52-65.

Cotanch, K.W., R.J. Grant, M.E. Van Amburgh, A. Zontoni, M. Fustini, A. Palmonari and A. Formigoni. 2014. Applications of uNDF in ration modeling and formulation. Proc. Cornell Nutr. Conf. p. 114-129.

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