

NIRS Consortium Membership NEWS

January/February, 2003

NIRS Consortium 2003 Annual Conference Recap

With the 2002 Annual Conference 2 weeks behind us, a recap of projects we will address includes:

1. Updates to 5000 spectra equations
2. Software (& hardware) updates
3. Local equation test period
4. Modification of pricing for Consortium membership and/or equation packages
5. Starch method evaluation
6. Consortium starch equation
7. Drying methodology

Updating Consortium equations to 5000 spectra will continue as planned. Output will include predicted values as well as calculated values. Output will be packaged according to the general pricing structure discussed at the meeting, either the basic package or the TDN package. Remaining work to incorporate into the 5000 equations includes ether extract and NDFCP.

Consortium members have an opportunity to upgrade their software to ISIscan, which is a 32 bit (vs 16 bit) package, allows access to a central database, allows better communications, and would allow us to put equation updates on a server for members

to download. Foss' proposal is for members to be able to purchase ISIscan for \$1,900, with Win ISI 1.5 included. ISI scan is the scanning package, while Win ISI 1.5 is the calibration package.

Implementing Local equation capabilities for Consortium members could proceed in several possible ways. Firstly, the Consortium could aid individual labs in developing Local in their lab, using that lab's own database, or some shared database developed by the Consortium. In this case, each lab would implement Local as they like for their particular situation. The second possibility is for the Consortium to develop a master database that all participants would share and help update. An important consideration as we proceed is how to handle/give credit to those labs who are able to contribute sample spectra as well as wet chemistry.

The Consortium pricing structure will be re-evaluated by the Finance Committee to reflect comments and input from members. The finance committee is made up of Neal Martin, Dan Undersander, Steve Peterson, Brian Shreve, Dave Taysom, and Patty Laskowski. A goal is to make the pricing structure fair to all members and give credit to those labs that are able to contribute spectra and wet chemistry data. The Finance Committee

has planned a meeting for March 6th to discuss the pricing structure.

We are encouraging any members with suggestions or comments regarding the pricing structure, to please contact anyone on the Finance Committee. All suggestions will be discussed and we will try to incorporate all concerns.

Many members were interested in development of a Consortium starch equation. The first step in this is to evaluate methods currently used by members to determine how similar or different results are and what in fact each method measures (eg. total NFCs, partition out sugars, etc.). If methods and output are similar, it is possible to create a calibration that includes or accommodates several methods. One important item that will be considered is the difference between gelatinization and hydrolysis versus glucose measurement. If all participants are able to replicate glucose measurement, then perhaps the focus might be on how to replicate gelatinization/hydrolysis.

After evaluation, if we find that methods are currently too different, then the Consortium may recommend a reference method that gets most truly at starch and excludes other substances. This reference method would be used to develop the NIR starch equation using a single reference lab (or using data from participants who would implement this method and test in their lab).

Fourteen member labs have agreed to participate in a Starch Sample Exchange, with 3 more interested in participating in the equation development in some capacity. Mary Beth Hall will collaborate with us and head up the evaluation of data from the sample exchange. Thirteen samples (12 from MBH) will be distributed to participants. Labs will use their regular technique to analyze the samples. Mary Beth will then review the data so that we can determine the next step.

Once developed, a detailed protocol for the sample exchange will be sent out to participants.

After the presentation on microwave versus oven drying, in addition to Don Sapienza's clear image on effect of drying method on starch granules, the group had a lot to think about in terms of where to go. Rock River Lab is currently carrying out an initial drying method evaluation. After some initial results, we will determine how to proceed, perhaps teaming up with USDFRC.

As projects progress, Consortium members will be contacted for participation. Thanks to everyone's input at the Annual Conference this year!

NIRS Consortium Annual Conference Proceedings on the Web

If you missed the conference, missed any of the handouts, or would like to see some of those images again, please visit the NIRS Consortium website at:

<http://www.uwex.edu/ces/forage/NIRS/home-page.htm>

OR visit the USDFRC site at:

<http://dfrc.wisc.edu/NIRS2003.html>

New Members Welcomed to NIRS Consortium

We would like to welcome eight new members to the Consortium!

Custom Laboratory, Inc. – Golden City, MO

Fas-Test Forage Lab, Inc. – Eaton, CO

Feed & Environmental Water Lab/ University of Georgia – Athens, GA

High Desert Dairy Lab – Nampa, ID

Michigan State University – East Lansing, MI

Mycogen Seeds / Dow Agrosiences – Breckenridge, MN

Oregon State University/ Klamath Experiment Station – Klamath Falls, OR

Weld Laboratories, Inc. – Greeley, CO

For more information on any of the Consortium's members and contact information, please see your member lists.

Current Status of Protein Digestibility

- Pat Hoffman

It is well known that legume and grass hays or silages supply large quantities of crude protein to ruminant diets. Crude protein in legume and grass hays and silages can be divided into protein that is degraded in the rumen (rumen degradable protein- RDP) and protein that escapes rumen degradation (rumen undegraded protein – RUP). Numerous

analytical procedures have been used to determine RDP and RUP in hays and silages but most research procedures have had little commercial utility.

In 1999 University of Wisconsin dairy scientists developed an NIRS application for the prediction of RDP and RUP in legume and grass hays and silages. This NIRS application has been available and commercially used for approximately 3 years. This system has been demonstrated to be quite effective in predicting RDP and RUP content of hays and silages, but the overall interest by dairy producers and nutrition consultants in the utility of the test has been relatively low. There are some logical reasons for low interest level in this test. First, nutrition consultants have had a long history of using book values for RDP and RUP and habits can be difficult to break. Second, research has demonstrated that predicting milk production responses from adjusting diets for RDP and RUP can be challenging and at times results are unpredictable. Third, protein supplements during the course of the RUP RDP test release have been relatively low with numerous high RUP supplements such as distillers grains, porcine meat and bone meal and blood meal being very cost competitive. As a result critically evaluating RDP and RUP in forages has not been a high priority among dairy producers and nutrition consultants.

While demand for RDP and RUP evaluation in forages has not been high, its utility in tailoring protein feeding in ruminant diets is still excellent. In addition to the heavy emphasis on nutrient management, dairy and other livestock producers will need to pay careful attention to nitrogen (protein) feeding efficiencies of which the RDP RUP NIRS test greatly aids because legume and grass forages do vary considerably in RDP and RUP content. Listed in Figures 1 and 2 are the distribution of RUP in legume/grass silages and hays respectively.

Figure 1. Distribution of RUP in Legume and Grass Silages

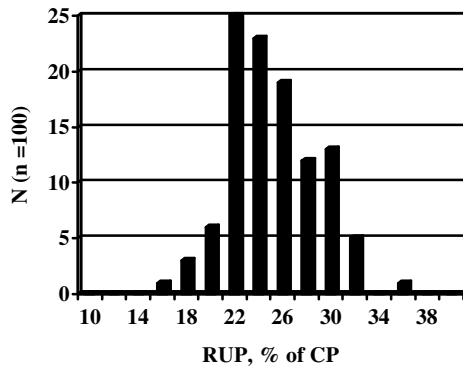
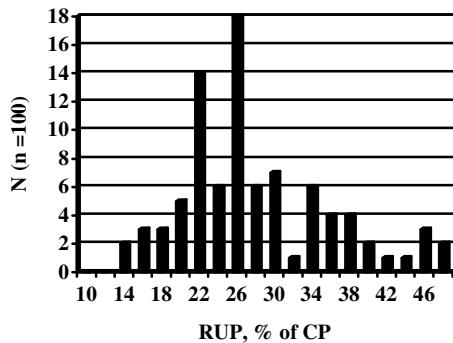


Figure 2. Distribution of RUP in Legume and Grass Hays



New Version of Milk 2000 Available on the Web

To be released on Monday, March 3, 2003, Milk 2000 version 7.5 will be available from the University of Wisconsin Forage Research and Extension website:

<http://www.uwex.edu/ces/forage/>

To go directly to the spreadsheet, go to: <http://www.uwex.edu/ces/forage/pubs/milk2000.xls>

In version 7.5 of Milk 2000, the 0.75 adjustment for fiber digestibility has been taken out and NDFCP has been included.

REVIEW of Digestible Fiber Analysis of Alfalfa and Grass/Legume Mixtures

- Dan Undersander- From Summer 2002 Newsletter

The NIRS Consortium released IVTDMD and dNDF, with a calculation for NDFD for alfalfa and grass legume mixtures equations last June, 2002.

The revised equations seem to be performing very well and we will continue to monitor them with your help.

A few important considerations to help improve output of results:

1) We should try to use common terminology. The recommendation is to follow NRC and use dNDF for digestible NDF expressed as a percent of dry matter and NDFD for digestible NDF expressed as a percent of NDF.

2) We recommend reporting the following parameters: IVTDMD and NDFD. We do not recommend reporting the NDF2 from these equations or dNDF. We feel that these additional parameters will simply confuse the public.

3) The equation estimates its own NDF2. This term, not NDF from other equations, must be used to convert dNDF to NDFD. This NDF2 estimate will be close to other estimates but not the same. It is based on spectra from 5000 instruments not trimmed to 4500 as other equations. We are in the process of converting all equations to 5000 instruments to improve accuracy.

4) Be prepared that TDN values calculated from this estimate are lower than historic TDN values and some may consider them erroneous but the 2001 NRC for Dairy Animals has lowered TDN values for many feedstuffs.

5) The new test is very sensitive to heat damaged hay or haylage and will give significantly lower values where heat damage is present. Nutritionists have never adjusted energy down for heat damage but the little research that has been done suggests it should be.

Where to find Current RFQ Calculations

In the summer 2002 Consortium Newsletter, we reported on RFQ and supplied an article by Undersander and Moore, June, 2002. This article outlines the most current calculations and determination of RFQ. A slight simplification in calculation was made when the article was put on the web. However, the calculation results are the same. So please refer to the summer 2002 newsletter or go to: <http://www.uwex.edu/ces/forage/pubs/rfq.htm> These are final versions and no other changes have been made to RFQ.

For further information on any of these topics, please contact Patty Laskowski.

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