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September 2017
Volume 5 Issue 4

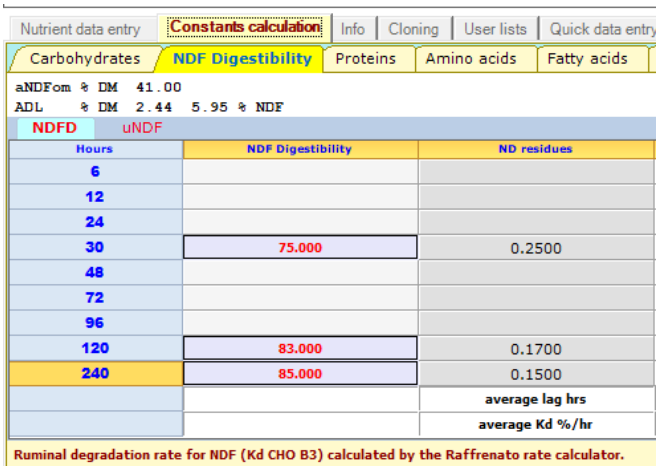
NDS Dynamics

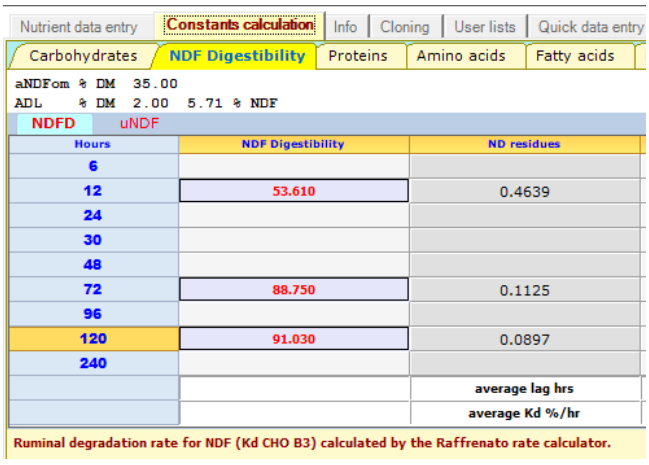
Importance of the Inputs; Taking advantage of new inputs for better understanding.

In a recent meeting with Dr. Mike Van Amburgh much of the discussion was around understanding fiber digestibility. At the risk of "beating a dead horse", it may be useful to discuss this again so that NDS users are taking full advantage of the 6.55 inputs for fiber and non-fiber NDF sources in ration formulation. During the meeting, the statement was made that understanding ME predictions in rations is centered around fiber digestibility, and that predicted ME in rations is most sensitive to fiber digestibility.

As a review, in CNCPS an estimate of indigestible fiber is necessary for calculating potentially digestible NDF and its degradation rate. In the original CNCPS version, indigestible NDF was estimated as lignin x 2.4. In CNCPS version 6.0 biology, a single time point of NDF digestion was used to determine a rate at which NDF would digest. The default uNDF used in that calculation was estimated by the lignin times 2.4 method. The current CNCPS version 6.55 (now used in NDS) now uses the 3-time point NDFd, which gives a much better determination of the digestion rate and the uNDF for that forage compared to the old book values. This is a great input for obtaining a more accurate rate and pool size for your forages!

Below are shown the inputs for the NDFd timepoints for forages on the left side (30, 120, 240) and the inputs for non-forages on the right (12, 72, 120). These are easily imported using the Standard xml formats from most major forage labs.





Below are the results for a typical ration using both a CNCPS single timepoint rate, then the newer three timepoint inputs from lab analysis. These are applied to a forage, corn silage, first with the old single timepoint, then using a poor and a good digestibility result for the 3-time NDFd in the CNCPS format. The same is done using a byproduct which is wet corn gluten feed.

	NDF Ferment % DM	Ferment of the aNDF %	ME Milk
Corn Silage(single rate)	14	45	82
Poor Corn Silage (3 rates)	13.7	44.3	79
Good Corn Silage(3 rates)	15.8	51	86
Gluten (single rate)	14.4	42.5	82
Poor Gluten (3 rate)	16	47	84
Good Gluten (3 rate)	17.1	50.6	86

As you can see the adjustment of the rates can explain 5 to 6 pounds of milk when working with the corn silage in our example above. When adjusted, the NDFd rates for gluten feed in our examples above can help explain 4 pounds of milk in those rations. These examples also showed differences in MP production also but since these rations like most are first energy limiting the ME predictions are shown. Another aspect when changing the rates and then getting the uNDF for these forages will help us to understand the total uNDF in the ration and help explain intake capacity of the rumen using the Rumen Tab in NDS. That is a continuing discussion we have had and will continue to discuss in further communications. In summary for this writing looking at the results the forage adjustment does show a change in ME when **results** are adjusted for good or poor values but what is of interest is that even poor byproduct analysis did show a ME Milk increase compared to the old single timepoint, and thus may give us insight to how we have evaluated some byproducts in the past and the need for that kind of data.

Send us your comments on these topics! Dave is at rumendvm@gmail.com; RUM&N at info@rumen.it

Note that the features and utilities developed by the NDS team described above are not components of the underlying CNCPS model, and do not change the CNCPS outputs or results. *Questions about use of these features should be directed to the NDS support team, and not to the CNCPS group at Cornell.*

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