TECHNICAL NOTES

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Hay or forage tissue samples for NUTBAL

You can use the results from hay and or forage tissue analysis as the diet quality input for NUTBAL. However, there are some very important considerations that need to be evaluated before this option is chosen.

First of all, NUTBAL was designed to be used in conjunction with fecal NIRS analysis. The idea is that fecal samples represent exactly what the animal consumed whereas, hay samples and plant tissue samples are effectively what is on offer or potential to the animals and not necessarily representative of what the animals actually ate.

Secondly, the sampling method for forage is also very important. Close attention needs to be paid on what species the animals are eating, and what parts of those plants are being grazed. (A simple example of this is if the entire plant was sent in for tissue sampling, when the animals were only eating a portion of the plant. An entire plant could have a very different forage value rating then say only the tender green leaves that may be being consumed. Typically animals will only eat the top third of the plant unless plant re-growth is exceeded by the grazing interval.

Finally, the most important consideration would be the method used to calculate digestibility of the forage. Most forage testing labs report % TDN (Total Digestible Nutrients) as the forages energy and or digestibility measurement. TDN is calculated as the digestible CP (Crude Protein), Crude Fiber insoluble carbohydrates, NFE (Nitrogen Free Extract) soluble carbohydrates, and EE (%Fat) X 2.25, added together. To get these numbers the proximate analysis values for the constituents that contains energy: crude protein, crude fiber, ether extract, and NFE. Multiply each times their digestibility, and fat times 2.25, and add the values together and get % TDN.

NUTBAL uses Digestible Organic Matter (DOM). DOM is an in situ digestion procedure and NDF analysis corrected for time in bath and in vitro digestion correction. When testing NUTBAL, DOM proved to provide more consistent predictions of actual animal performance when compared to TDN.

There is a fairly robust conversion to go between TDN and DOM if TDN is calculated from the proximate analysis of all four components, the only problem is that analysis is costly and time consuming so many commercial forage testing labs calculate TDN off of a regression from only one or two constituents. When TDN is calculated this way the conversion to DOM does not work as well.

Bottom line is this can be done but discretion should be used when evaluating the output of NUTBAL when TDN is used from tissue samples. Please feel free to contact the GanLab should you have any additional questions. Information on TAMU's forage testing lab can be found at http://soiltesting.tamu.edu/.