



Why Use NDF Determined on an Organic Matter Basis (aNDFom)?

There has been discussion lately that NDF should be determined by the forage laboratory on an “ash-free” or “organic matter basis”. Is this a matter of focusing too much on the details, or is this something that is a real issue for proper characterization of forage? Evaluating some lab data may help you to determine if this is worthy of consideration.

How is aNDFom different than a traditional NDF value reported from the laboratory?

When NDF is determined on an organic matter basis, or “ash-free”, the residue from the separation of the fiber is placed in an ashing furnace at approximately 600 degrees centigrade for two hours. All that is left after that heat treatment is the glass fiber filter that the residue was collected on and any residual ash that was collected with the fiber. This is weighed and by difference the lab determines the amount of organic NDF that was present.

To extract NDF, a portion of forage or feed material is boiled in a detergent solution that is buffered to a pH of 7.0, hence the term “neutral detergent fiber”. Some ash will be soluble in hot neutral detergent solution, but a lot of ash will not. When the fiber is recovered on a 1.5 um glass fiber filter, much of the insoluble ash is recovered as well and we perceive it as fiber. In most cases, there is not a high amount of ash that would elevate the NDF determination. However, there are a certain percentage of samples with elevated ash content. This can be due to incorporation of soil at harvest, rain splash of soil on a wilting crop, irrigation water, flooding, or incorporation of mud while packing a trench.

If this is important, why have laboratories not provided NDF values on an organic matter basis?

Commercial laboratories in the U.S. traditionally have not reported aNDFom. Analysis for research purposes is performed both ways. The European feed industry has traditionally utilized an organic matter approach. U.S. forage laboratories have not run aNDFom as the industry has not perceived it to be an issue and because it is another labor intensive step to ash the NDF residue after collection. It can often cause results to be delayed for a day. As chemistry analyses are not run on an organic matter basis, neither are NIR calibrations developed from this data. Revising or adding another constituent to all of a laboratory’s NIR equations becomes a daunting and costly task.

What does the data tell us?

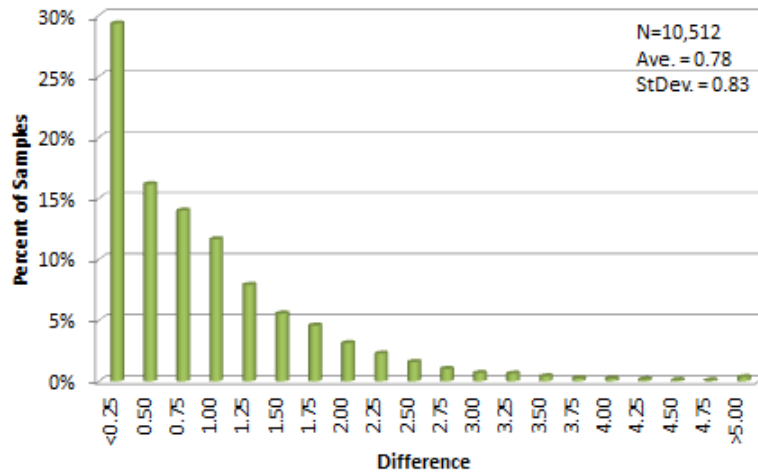
Following are two distribution graphs of a group of corn silage samples and sorghum samples where we have both aNDF and aNDFom values. What is reported in the distribution graph is the difference between these two values. This represents the over-estimation of NDF through insoluble ash presence in the sample. Corn silage as a forage crop probably has as minimal a problem with insoluble ash as any forage crop. By contrast, sorghum and sorghum/sudan crops have very consistent issues with insoluble ash.

CVAS strongly believes that clients should have the option of NDF data generated on an organic matter basis. We have started providing this data through our NIR equations where we will report both a traditional aNDF value and the aNDFom value. If you desire that chemistry analysis be run on an ash-free basis, we will do this for an additional charge of \$3.50 per sample.

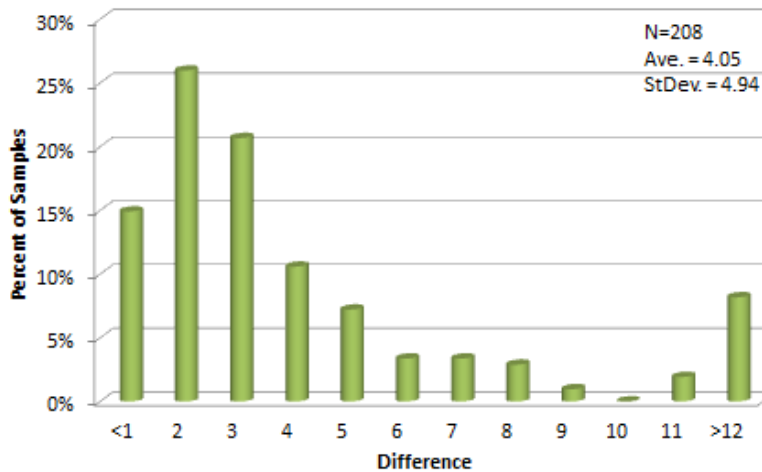




Difference Between aNDF and aNDF on an Organic Matter Basis in Selected Corn Silage Samples by NIR (CVAS, 2012 crop)



Difference Between aNDF and aNDF on an Organic Matter Basis in Selected Soghum and Soghum/Sudan Samples by NIR (CVAS, 2012 crop)



As always, if you have questions regarding forage and feed analysis issues, please give us a call.

10/2012

