

Agri *Resource*

Near Infrared Reflectance Spectroscopy (NIR)



Near Infrared Reflectance spectroscopy (NIR) is a complicated analytical method for quickly determining nutrient structure. Utilizing spectral properties of the forage, multiple nutrients are determined simultaneously. The NIR was first utilized for forage and feed analysis in the late 1970's. Its popularity has blossomed over the last 25 years to make it our most popular service. NIR is recognized by the Association of Official Analytical Chemists (AOAC) as an official method of analysis.

We continued to enhance our computer hardware and software which has contributed to progressive improvement of the technology. The NIR is calibration dependent. Historically, our calibrations were developed for common sample types by analyzing hundreds to thousands of samples. The chemical information contained in these samples is correlated to spectral properties and a calibration is born.

As the need for additional elements such as Fat and Ash were asked for by our customers, we were able to expand our calibrations. As the need for Starch and Sugar was apparent, we worked with the University of West Virginia to expand our calibrations. We are also able to expand calibrations through being a member of the NIRS Consortium.

Pioneer Water Testing Laboratory operates a 6500 research monochromometer. The calibrations used are extremely robust producing the highest accuracy possible.

Benefits of using NIR:

- Turn Around Time:
 - Instead of waiting 2 to 3 days for a nutritional analysis (wet chemistry) to come back from an agricultural testing laboratory, **the NIR can achieve same day service**
- Procedure is non-destructive making possible repeatability within a sample.
- An excellent way to monitor any change within forage quality allowing rations to be corrected real time.