

SPECTRAL EVOLUTION

On Farm/In Field Forage Analysis

High quality forage is one of the best methods of improving feeding efficiency for livestock from poultry and pigs to cattle and dairy animals. Why use forages? Economically, forage is cheaper than concentrates/supplements. It's healthier, enhancing animal digestive functions, and it can even improve the fatty acid profile of meat. Quality forage can have a significant impact on animal health and ultimately, net profit. Knowing the quality of the forage being bought or sold should be taken into consideration to improve overall farm profitability.

Forage can be broadly defined as the vegetative portion of plants consumed by animals. Examples of forages include hay, haylage, silage, straw, fodder, and pasture. Forage analysis can help determine whether the forage needs to be supplemented. There's no reliable way to judge the value of forage by feel, texture, smell, or appearance.

NIR spectroscopy can be used to measure moisture, protein, fiber, dry matter, minerals, anti-nutritional elements, and more. The key spectral range is 400—1000nm. There are several advantages NIR spectrometers can deliver:

- ◆ Fast, clean, non-polluting, non-invasive, and non-destructive analysis
- ◆ No sample preparation
- ◆ Enables multiple analyses at the same time in one operation
- ◆ Save files for additional chemometrics or other analyses
- ◆ Can be applied in the field as opposed to shipment to a lab

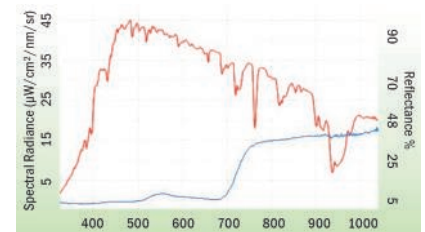
UV/VIS/NIR spectrometers from SPECTRAL EVOLUTION deliver faster, more accurate, and more flexible ways to analyze forage than traditional estimations or wet chemistry. NIR spectrometers such as the PSR-1100f provide an affordable solution for forage analyses at an affordable price:

- ◆ 320-1100nm spectral range
- ◆ Keypad and LCD display—stores 1600 scans without a computer
- ◆ One-touch operation with autoexposure and autoshutter
- ◆ Compact, lightweight, handheld unit—less than four pounds
- ◆ Snap-in rechargeable battery
- ◆ Built-in laser targeting
- ◆ Easy-to-use DARWin SP Data Acquisition software saves scans as ASCII files for use with third party software, including chemometrics without pre-processing

Forage analysis using NIR is a useful tool for both feed manufacturers and livestock integrators because it is rapid, reliable, and capable of providing the information necessary to measure and control the nutrient quality of forage as an essential part of the feed cycle. An NIR spectrometer can offer the analyses necessary for better business opportunities on ingredient selection and purchases and provide a match between nutrition and production and ultimately, better profitability.



Assessing the nutrient value of forage can be a key factor in more efficient and profitable dairy and livestock production.



Reflectance of grass field section measured using the PSR-1100f with a standard 4° field of view lens. Red trace represents a control solar scan as measured from a reflectance panel. The blue trace represents a scan of the grass.

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