Dietary Analysis...

A New Management Tool for
Louisiana Cattlemen

How often have you wondered about the quality of your pasture?

When you purchase hay or feed, do you consider its protein value or digestibility?

The Natural Resources Conservation Service addresses these questions and more.

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Dietary Analysis... A New Management Tool for Louisiana Cattlemen

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Livestock forage quality has always been a big concern for Louisiana cattle producers.

How often have you wondered about the quality of your pastures? When you purchase hay do you consider its protein value or digestibility?

In a confined feeding operation livestock nutrition can be relatively simple. You know the class, age, and sex of each animal and their particular nutritional needs. You also know what gains you expect to put on the cattle. So, you formulate a feed to meet the animals’ needs and your goals, feed the feed, and let the animals do the rest.

However, when dealing with grazing animals, controlling diet quality and meeting livestock nutritional requirements are much more complex. Livestock producers often find themselves “in the dark” about the quality of forages in their pastures or in their hay. How do you know if the forage is actually meeting the nutritional needs of your animals? This question particularly becomes critical during extended droughts and during the winter when supplementation is required. We now have a technology to let the animals tell us if what they are eating is meeting their needs. It is saving ranchers thousands of dollars each year.

In 1988 The Ranching System Group in the Department of Rangeland Ecology and Management at Texas A&M University developed a model and began nutritional monitoring on grazinglands. Its Grazingland Animal Nutrition Laboratory (GAN Lab) uses a process called Near Infrared Reflective Spectroscopy (NIRS) to evaluate livestock fecal samples.

Many Louisiana livestock producers are using this technology to monitor the diet quality of their herds. Specifically, dietary crude protein (CP) and digestible organic matter (DOM) are evaluated relative to the needs of their herds at any given time of the year. This information on diet quality, coupled with the model’s decision management tool, provides the livestock producer the information to balance animal nutritional demands with available forage resources. This decision management tool used by Natural Resources Conservation Service (NRCS) grazing specialists is known as Nutritional Balance Analyzer or NUTBAL.

The NRCS has been cooperating with Louisiana livestock producers to monitor forage/diet qualities through the use of NIRS/NUTBAL technology since 1993. Over 1450 samples representing 175 livestock operations throughout Louisiana have been collected and analyzed.

Working on a voluntary cooperative basis with NRCS, livestock producers across the state are gaining insight as to how to manage their grazing systems to increase the quality of their herd’s diet.

This extensive cooperative effort is proving producers can actually reduce production costs and increase herd performance while protecting soil and water resources. It is the intention of NRCS to begin sharing this technology and its positive impact with livestock producers throughout the state.
Sample Locations of Bermuda, Bahia, and Ryegrass in Louisiana

![Map of Louisiana with locations of Bermuda, Bahia, and Ryegrass highlighted]

Analysis of fecal sampling in Louisiana since 1993 with NIRS technology has shown that forage quality during the growing season is generally adequate to meet animal nutritional requirements. Examination of seven years of monthly quality averages for bahiagrass, bermudagrass, and ryegrass reveals crude protein (CP) values can be as high as 11.7%, 12.3% and 15.8%, respectively. Digestible organic matter (DOM) values can be as high as 63.1%, 64.4%, and 67.1%, respectively.

Forage quality values of cool season grasses, such as ryegrass, are normally higher than those of the warm season species. However, in general, quality values for bermudagrass and bahiagrass from April to the middle of September are adequate to meet the nutritional needs of the average cow herd in Louisiana. To a livestock producer in Louisiana this should be good news!

<table>
<thead>
<tr>
<th>Species</th>
<th>Crude Protein (%)</th>
<th>Digestible Organic Matter (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bahiagrass</td>
<td>11.7</td>
<td>63.1</td>
</tr>
<tr>
<td>Bermudagrass</td>
<td>12.3</td>
<td>64.4</td>
</tr>
<tr>
<td>Ryegrass</td>
<td>15.8</td>
<td>67.1</td>
</tr>
</tbody>
</table>

**Forage Quality Averages**

"The fecal sampling and the reports have given me the information that I needed to convert from the feed sack to a forage-based operation. My feed bill was drastically reduced. I now limit-graze my ryegrass throughout the winter and spring. This limit-grazing has worked well for me. I keep free choice hay available for the cattle when using this system. Because of the results obtained from the samples I now have confidence that my forage-based program meets the nutritional needs of my cattle."

"My feed bill has now gone from about $14,000 per year down to about $3,000 in the last year. The fecal sampling, NUTBAL reports, and technical assistance from the NRCS have helped me to identify those classes of animals that need more attention, and those classes of livestock that need less attention. I supplement smarter today than I did in the past. Because of the changes that I have made in my operation in the last 3 years, I have gotten out of the hay making business. I was able to sell my hay equipment. I have become confident in my ability to make it on more grass and less hay. I now purchase the hay that I use. The fecal sampling and NUTBAL reports have given me the confidence that I needed to make these management decisions."

*Chip Durand, Durand cattle company, St. Martinville, Louisiana. He is a registered and commercial Brangus breeder and runs 100 head of brood cows.*
Supplementation

Seven years of sampling has shown that you can expect, on the average, forage qualities will be adequate to meet your herd’s nutritional needs. We all know that these are averages; not every month in every year is going to be average. The data shows that values from some forages can be as low as 4.6 percent CP and 53 percent DOM. In other words, you should and probably will experience some differences on your operation. So, there will be times when you will have to supplement your herd’s diet to meet their nutritional needs.

Many producers understand and use forage analysis as a tool to determine diet quality, but they continue to feed supplements on the basis of habit, perceived need, or other reasons. Forage and hay analysis is an excellent tool for any producer. But because grazing animals are very selective in what they graze, relying on a forage analysis alone can lead to over feeding or feeding the wrong supplements; either of which adds to the cost of production.

How do you make decisions dealing with supplementation? What do you base your supplementation decisions on? Experience; “Grandpa and Dad did it this way”; “My neighbor does it this way”; “The feed salesman said that it was the best way”; “A friend of mine in another state said that this worked on his ranch”… and the list goes on and on! We all have ways to justify our decisions and purchases.

Louisiana livestock producers and the NRCS technical staff have shown that the use of the NIRS/NUTBAL technology provides the producer with a tool to make decisions concerning supplementation needs. The fecal sampling period is a “snapshot” of the real conditions for a specific herd of cattle on that day. This allows livestock operators the opportunity to determine the specific needs of their herd. The feed supplement that does the most effective and economical job can be determined with the use of the fecal sampling technology.

Dale Hensgens, Dale Hensgens Rice and Cattle Farm, in Crowley, Louisiana is a commercial F1 Braford producer. He runs 45 Hereford cows with Brahman bulls. “Because of the NRCS assistance and the NUTBAL reports, I changed my winter supplementation program. I realized that I could winter my fall calving cows on limit-grazed rye grass and rice straw at a much lower cost. I have feed troughs that have not been used since I started the sampling 2 years ago!” stated Mr. Hensgens. “The reports give me the information that I need when I need it to make good decisions.”

John Drue Taylor, a cattleman from Union Parish, has a purebred Limousin herd. Mr. Taylor uses fecal samples to know when to utilize supplements, especially when his hay quality is low. He states, “It lets me know where I was, it was a big help.”

David and Sherri Williams run a purebred Hereford operation in Red River Parish. David comments, “The fecal sampling and NUTBAL program has really helped us understand how to manage our forage and supplemental feed programs as one unit system.” Ms. Sherri adds, “In the winter of 1998 we discovered that we were feeding too much corn which was actually causing a weight loss in our cows. The NRCS helped us get back on track by adjusting our feed ration to give the herd what they needed.”
"I chose to utilize the samples (fecal sampling) and NRCS evaluations during the drought period of 1998. My supplementation program for my cows and early weaning program for my calves were based on this information. That experience in 1998 helped me to go through the drought of 1999 with more confidence."

Roy Laborde, Laborde Farm, runs 25 head of registered commercial Beefmaster brood cows in Hessmer, Louisiana.

Grazing animals are designed to obtain their nutrition needs from forages. Two major nutritional needs that concern livestock producers are protein and energy.

Protein is the primary component of muscle, internal organs and connective tissue. The animal’s need for protein varies with age and physiological state. Additionally, needs can vary with the season of the year. Forage protein values also change during the year.

Energy is used by grazing animals for work and is vital to metabolic processes. Forages contain energy as readily digested soluble components inside the cell and as less digestible fiber found in the cell walls. Grazing animals, especially ruminants, have the ability to utilize the energy found in forages due to the action of microbes in the rumen. Like those of protein, the energy needs of an animal changes throughout the year. Similarly, the energy content of forage changes during the growing season.

Knowing the protein and energy content of forage is vital to efficient production of livestock on grazing lands. Monitoring the nutritional content of a forage resource will help the livestock producer make informed pasture and nutritional management decisions and control unnecessary feeding cost.

"After 2½ years of sampling on the program I find that the report results are extremely accurate. The performance predictions are useful to me as a manager. I can make management decisions based on the NUTBAL reports with confidence. I have made adjustments to my limit grazing program based on the information. I now run 200 head of stocker heifers on 80 acres of ryegrass and have plenty of grass left over. The use of this technology takes the guesswork out of the unknown nutrition being received by the heifers. This technology and NRCS technical assistance gives you the information that you need to supplement smart, instead of just feeding something."

Johnny Boudreaux, Agnes Plantation Ranch and Rice Farm, Abbeville, Louisiana runs approximately 200 head of replacement type heifers.
Knowing what your cattle are getting from the pasture is valuable information. One of the most important things that we learned was that there is a big difference in the nutritional needs of the different ages of cattle and of the cattle at different stages of pregnancy.

ANTONIO HARRIS, Harris Family Ranch, operates a commercial cow/calf operation of 150 head of brood cows in Washington, Louisiana.

Information needed for application of NIRS/NUTBAL technology:
- Animal size (weight)
- Breed Type
- Milk Production Ability
- Stage of Development (age of the animal)
- Reproductive Stage
- Animal Class
- Stage of Pregnancy
- Environmental Factors
- Weight Performance Goals
- Diet Quality from Forage Base
- Do you feed concentrations and roughages?
- Are growing animals implanted?

Having an accurate profile of the grazing animal and your forage base is critical to the successful use of the NIRS/NUTBAL system.

Benefits of NRCS Technical assistance and application of the NIRS/NUTBAL system:
- Balancing forage quantity and availability to meet animal nutritional needs
- Management of your forage base during critical grazing periods
- Improved diet quality and animal performance by improved grazing management
- Enhancing potential economic benefits
- Conserving, improving, and sustaining Louisiana's grazing/land resource

Shannon Mendenhall, owner/manager of the Flat River Ranch in Elm Grove, LA states, "The information provided by NRCS and the NUTBAL program has helped me make crucial decisions in my stocker grazing operation. This is especially so during recent drought years."

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