

The Grassroots of Nutrition.

Could Testing Forage Save You Money?

BY CINDY FOLCK

Unlike products bought at the grocery store, pasture forage and hay don't have a nutritional label listing the percent of daily recommended nutrient levels. Hay and pasture don't even have the feed tag found on bags bought at the local elevator.

Hay and pasture contain specific nutrient needed for nutrition, but the question is how much of what nutrients. To make matters even more confusing, nutritional content of forage can vary widely from one pasture to another. Even stored forage will vary because each hay field produces different hay with its own nutritional make-up that even varies from cutting to cutting.

Sampling forage can save money in feed costs and profit, says Jimmy Henning

Extension forage specialist with the University of Kentucky. Henning emphasizes that stored forages such as hay need to be evaluated before feeding to a cow herd.

"Good hay saves the producer money because of lower feed costs," says Henning. "But testing bad hay saves the producer from a wreck."

He gives the example of a dry cow fed nutritionally-deficient hay that results in a miscarriage. She is then unable to breed back, costing the producer not only a calf, but a missed breeding season. Testing forage allows producers to compensate for deficiencies by offering supplements to the cows.

Forage is tested for protein, fiber content and total

digestible nutrients (TDN). Hay samples are done with a coring device to get a full representation of the bale. Henning recommends using about 15 bales for a sample.

"There is a lot of variation from cutting to cutting and field by field," he says. He notes producers need to separate the hay to keep like bales together for the samples.

Pasture forage doesn't need to be tested as regularly as stored forage, says Henning. He says pasture used for high performing livestock should be tested more often. The time for testing pasture is late fall and early winter to evaluate the nutritional information of the grass, says Henning.

Pasture contains the most nutrients when the forage is in the vegetative stage, when plants are green and leafy.

Henning says pastures kept in this condition will be most beneficial for the cattle.

"Pasture is a moving target, changing constantly," says Henning. He adds that testing stored forage should be a higher priority for producers, but pasture samples can be easily taken.

"Taking a pasture forage sample is like cutting hair," says Henning. Clip the grass about two inches above the dirt, where the cattle would normally graze the grass. Samples can be sent through most area Extension offices and universities for analysis. Some feed companies also offer analyzing services for forage samples.

A recent intensive grazing project conducted by the Indian Lake Watershed Project near Belle Center,



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Ohio, tested pasture forage on a weekly basis during the grazing season. (See table 3 at right.) The grazing was on 40 acres of recently released Conservation Reserve Program (CRP) land.

The pasture was divided into four sections by fence and water lines. Each section was subdivided into 1.4-acre paddocks with portable fence so the cattle could be moved into a new paddock each day. Sixty steers were backgrounded on the acreage.

Steve Boyles, Ohio State University Extension beef specialist, coordinated the weekly testing. The forage was tested for dry matter, crude protein, iron, copper, phosphorus, potassium and magnesium among others. He says the nutrients remained nearly constant throughout the grazing period, which extended from April to September. The protein level of the forage remained relatively high, ranging from 22 to 27 percent. Because the CRP land previously supported crops, Boyles says the samples showed a high rate of potassium.

"A supplemental mineral was offered free-choice to the cattle which contained magnesium and ionophores to guard against grass tetany," says Boyles. Grass tetany is caused by high levels of potassium which interferes with magnesium absorption.

In addition to testing forage for nutritional information, the project looked at pasture cover. A concern with converting CRP land into pasture is the low forage production which Boyle says results from years of no regular forage removal by machinery or livestock, other than a yearly mowing.

Weekly tests of forage density were processed by Mark Bennett, OSU Extension eastern Ohio grazing coordinator. The tests

TABLE 3

Forage analyses for Indian Lake Watershed Intensive Grazing Project (100% Dry Matter Basis)

Nutrient	Month						SE ^c
	April ^a	May	June	July	Aug.	Sept. ^b	
Dry Matter, %	16.6	15.9	21.9	24.5	22.9	40.8	1.79
Crude Protein, %	22.2	27.5	22.9	23.1	24.7	24.4	0.77
NDF ^d , %	49.8	46.4	45.7	50.5	45.8	45.6	1.40
Lignin, %	6.0	6.5	6.0	7.0	6.6	9.0	.55
NEP ^e , %	.59	.59	.59	.56	.58	.54	.01
NEG ^f , %	.28	.27	.29	.25	.28	.22	.02
Phosphorus, %	.37	.39	.42	.46	.57	.51	.02
Potassium, %	2.93	4.00	4.11	3.61	4.06	3.61	.13
Calcium, %	.78	.84	.76	.85	.93	1.11	.06
Magnesium, %	.26	.34	.37	.38	.43	.47	.02
Sulfur, %	.20	.20	.20	.20	.20	.20	—
Sodium, ppm ^g	118	168	212	87	224	130	25.6
Manganese, ppm	125	109	125	100	95	58	6.9
Iron, ppm	289	254	483	216	311	130	45.3
Copper, ppm	10	12	10	11	15	12	.6
Zinc, ppm	37	38	32	41	58	41	2.7
K ^h /(Ca+Mg) ⁱ	2.83	3.47	3.73	3.05	3.12	2.30	.76

^aFirst forage collection April 16, 1995

^bLast forage collection Sept. 7, 1995

^cStandard Error

^dNeutral Detergent Fiber

^eNet Energy Maintenance

^fNet Energy Gain

^gParts Per Million

^h% Potassium, ⁱCa/Calcium, ^jMg/Magnesium. A value of 2.0 has been correlated with an increase in frequency of testing.

looked at the amount of bare soil versus plants in the pasture. The results showed the forage volume in the pasture increased by 10 percent with the intensive grazing system.

The results also showed that the legumes and grasses in the pasture increased over the weed population, which decreased seven percent during the grazing period. Red clover was seeded at the beginning of the project to complement the existing forage on the CRP land.

Pasture forage depends on native species, climate and other factors. Nutrition can also play a part in determining plant selection. Henning says there is more protein in legumes, but less fiber. However, the fiber in legumes is more digestible, which results in more intake and energy. Henning points out that grasses are more persistent than legumes and will reproduce longer in a pasture without reseeding.

In the intensive grazing project, Boyles says the forage samples were collected on a

paddock just prior to when the steers entered. The samples were taken by walking diagonally across a cell and clipping forage at regular intervals.

Clipping pasture for forage analysis may be difficult on extensive range systems. The Grazing Animal Nutrition Laboratory is a service laboratory at Texas A&M University designed to analyze forage through fecal samples of cattle.

Jerry Struth, range scientist at Texas A&M University, says fecal

sampling can identify exactly what the cattle are eating instead of what is in the pasture.

The samples are evaluated for crude protein and digestibility. The technology is a near-infrared reflective spectroscopy, which is a system of identifying the chemicals in the fecal material through wave lengths and light reflectance.

Sound high tech? Struth says the laboratory is the only one in the world that can sample fecal material to determine the animals diet. There are plans to build labs in at least three other countries. He encourages fecal sampling over pasture sampling because of accuracy.

"I think most producers underestimate the diet of the cattle," he says. "The fecal

sampling is what the cattle are eating, not simply what is in the pasture." Fecal sampling looks at the forages under the conditions the cattle experience, rather than a producer's perception of their diet. The bigger and more complex the range system, the more fecal sampling would be beneficial.

Struth recommends producers sample the fecal material every 30 days. The busiest time for the lab is during seasonal transition months, like February and March, November and December, or July and August. Producers are concerned with changing weather seasons and impending calving seasons.

Samples are taken from at least five cows in one herd and one pasture. About one

tablespoon is taken from each cow, resulting in about a cup and a half for each sample. Struth says the samples are express mailed to the laboratory in a specially-designed Styrofoam package with ice packs. Producers identify conditions on the farm so the analysis will fit their situation.

All these ways of sampling have the common goal of helping producers meet the nutritional needs of their cow herds.

"We are just trying to help producers feed smarter," says Struth.

He has an example of one ranch where the producer had three separate pastures tested. The pastures were on the same ranch, but one pasture test results showed

nine percent protein, another was seven percent protein, and the third pasture only had four percent protein.

The testing helps producers identify potential problem areas and take the step to correct the deficiencies. Struth thinks the cost of testing is worth one calf to understand the nutritional needs of the herd.

Henning emphasizes that forage sampling can help producers keep feed costs in line. He says forage sampling not only saves feed costs, but can eliminate some production problems in a cow herd.

