NutBal Taps the Secrets of Quality Pastures

Report of 1998 Ruminant Livestock Efficiency Program Study

BACKGROUND:
Quality forage improves livestock performance. Profitability in the livestock industry requires an understanding of nutrition and the available natural resources. Having an accurate analysis of the quality of forages that livestock consume is increasingly gaining attention.

Progressive producers want to find out just how good their pastures are. That's why ranchers across the state have teamed up with Natural Resources Conservation Service (NRCS) personnel to take part in a production efficiency program. Several South Dakota producers got involved with an NRCS sponsored project to analyze the quality potential of their pastures. This was accomplished with technical assistance from the South Dakota's NRCS Range Team working with field office personnel and interested producers.

The effort is part of the nationwide project called "The Ruminant Livestock Efficiency Program."

The project requires collecting and processing fecal samples from free-ranging livestock. Texas A&M University analyzes the samples using Near Infrared Reflectance Spectroscopy (NIRS) to predict dietary crude protein (CP) and digestible organic matter (DOM). This analysis is then returned to the producer for making grazing management decisions.

Once the crude protein and digestible organic matter figures are known, the data can be input into a ration balancing program called "Nutritional Balancer" (NutBal).

Herd information, pasture conditions, weather, and other feed management data is furnished by the producer. Using this information, the NutBal computer program can predict animal performance.

1998 STUDY RESULTS AND COMMENTS FROM PARTICIPANTS:

Preliminary results of the field case studies are showing that the "weak link" to production efficiency may be low quality forage diets.

One of the ranchers involved in the 1998 project was Meade County rancher, Larry Stomprud. He has awards from the Perkins County and Faith Stock Shows for quality in beef cattle. Even with his success, Stomprud is concerned about surviving in the future and has found the NutBal study useful.

Stomprud says, "What surprised me was how fast the protein level can drop when it either dries up or the pasture is getting a little short. Being a cow-calf operator, I'm not so concerned about average daily gain as a yearling operator, but I don't want my mother cows to lose too much weight either."

Hyde County grazer Dave Hieb says, "I like the program because it helps me manage my place better. It showed when and where to add energy to my livestock diet during certain periods of the year." Hieb and his family operate a yearling stocker operation south of Hightmore, South Dakota.

Is this new technology accurate? Well, according to Dave Hieb, "I thought they (NutBal predicted weights) were right on. I used NutBal as a tool to help or aid my planned grazing system."

Study Results of Several Herds Involved in the 1998 Project

The results of the data collection and analysis were generally consistent with actual livestock performance. Of those herds weighing cattle for the project, only two herds did not closely relate to the NutBal computer predictions. Note that all herds were weighed under ranch conditions and amount of fill could influence the weights.
Others are not as convinced that the NutBal program can accurately predict animal performance. Chance Davis, a Butte County rancher using the program says, "Currently I have about a 50/50 confidence level in the program, it is another tool to help in monitoring animal performance along with experience." Just like any other computer program available today, the accuracy of all the information loaded into the program predicts the accuracy of the output.

Davis goes on to say, "A potential benefit of NutBal is to provide the producer information to target when your pasture quality is no longer providing the animal performance needed to meet economic returns. Knowing this will help me in marketing and/or supplementing strategies."

Is this new idea of measuring livestock diet quality by using fecal samples accurate? Some say clipping the grass available to grazing livestock is more accurate. To find out, NRCS personnel collected grab samples of growing forage like the livestock were selecting in the pasture. Five different herds across the state were sampled at the same time a fecal sample was collected.

Preliminary results indicate that grab samples can not accurately duplicate the quality of forage selected by livestock. This confirms prior research findings in other areas of the country. It is important to note that the fecal sample collection process gives the producer a "snapshot" of the diet being selected. Sample results will change as the quality of available forage changes in the pasture. That’s why the accuracy of fecal sampling and NutBal was checked using season-long animal performance. Participating producers were not able to weigh livestock every time a fecal sample was collected.

Butte Co. rancher Jane Kok thought the fecal analysis was good information. "Without the program we probably wouldn’t have done mid-weights and that helped our confidence that we were accomplishing our animal performance." Like others in the project, the Kok’s used livestock scales throughout the grazing season just to verify animal performance. "This was the first year for the bred heifer program so we liked the added assurance that the heifers were being rotated timely and maintaining an adequate level of nutrition,” adds Kok.

Fecal samples identified how energy levels can be maintained at a higher level by carefully rotating livestock through pastures. Such a grazing rotation was demonstrated on a Codington County riparian area demonstration project. Producer Vince Foley implemented a planned grazing system by dividing the grazing land into five different pastures.

Foley stated, "The combination of expertise of the NRCS staff, and the real-world experience of my neighbors generated a project that provides a clear example and data on why rotational grazing will work."

Interest in learning the secrets of quality pastures continues to grow as other producers hear about fecal sampling and NutBal. "This work will catch the eye of the producer,” says Mike Davelaar, District Sales Manager for Quality Liquid Feeds, Inc. Davelaar actively participated in the 1998 project.

For more information about the Ruminant Livestock Efficiency Program, or to get involved in the study, contact David Steffen, Rangeland Management Specialist, USDA Natural Resources Conservation Service, Box 339, Burke, SD 57523. Telephone: 605-775-9122.

![Digestable Organic Matter by Pasture](image)

Digestable Organic Matter by Pasture

| Yearling Steers, Codington County, South Dakota 1998 |
|---|---|---|---|---|---|---|
| 75 | 70 | 65 | 60 | 55 | 50 | 45 |
| Pasture | Pasture | Pasture | Pasture | Pasture | Pasture | Pasture |
| 5 | 4 | 3 | 2 | 2 | 1 |

This graph shows how digestible organic matter (DOM) increased each time the cattle were moved to a different pasture. The fecal sample for pasture three was collected the day cattle were moved after grazing six days. Energy had dropped because of a shortage of forage in the small pasture.

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