

# *Fecal Sampling in Rotation Grazing Systems*

*-Grazingland Animal Nutrition Lab*

When you pick up a fecal sample and send the sample to the GAN Lab, the estimates of diet quality (e.g. crude protein, digestible organic matter) represent mixing in varying degrees a series of meals that were consumed for the last 5 days. The diet quality estimated by NIRS fecal profiling is most correlated with the diet at 36 hours prior to collection. However, it is not predictive of the diet due to the meal mixing that occurs over time. Typically, we see that on the day of herd rotation, diet quality predicted with NIRS is reflective of the lowest period in the previously grazed pasture. Approximately, 24 hours after rotation, quality will peak out and you will get a general decline in quality as selective grazing removes more desirable forage species and plant parts. If grazing periods are long enough regrowth or selection of new species of higher quality but lower preference can occur, resulting in a secondary peak of diet quality.

There are four basic diet quality profiles observed in rotational grazing systems. These are provided in the figure below:

## **Typical Profile**

The peak occurs the second day of grazing and then gradually declines in quality. If only one sample is desired, divide the number of days grazed by 2 and add 1 day and sample on that day. See arrow for suggested day in the figure.

## **Early Response Profile**

Due to the limited amount of high quality in the pasture and the high grazing pressure, diet quality rises rapidly then sharply declines. To collect only one sample, divide the number of days by 2 and subtract one day to determine when to sample.

## **Stable Quality Profile**

Due to past grazing management, or land practice such as burning, some paddocks have relative high uniformity in plant parts and phenology or high diversity of similar palatability allowing the animal to select a relative stable diet quality throughout the grazing period. To collect only one sample, divide the number of days graze by 2 and sample on that day.

## **Dual Peak Profile**

Long grazing periods offer animals the opportunity to either graze regrowth or species that they normally would not eat that are of higher quality than the declining preferred forage supply in the paddock. In this case, we recommend that if you only want one sample during a grazing period, determine the number of days you desire to stay in the paddock and divide by 2 and sample on that day. The expected timing of the secondary peak can cause this to shift plus or minus one day.

Another method but less timely, is to collect a small sample each day or every other day for longer grazing periods and add that to a plastic bag a refrigerator or freezer and then have it analyzed as a single composite. Be very careful to always use the same VOLUME of sample when you sample each day to weight the analysis properly.

The only way to determine when peaks occur in a grazing period is to spend the time and money to sample daily or every other day and use the polynomial line fitting function in a spreadsheet to plot when the peak(s) might occur.