



Nutrient Management

Protein Monitoring Tools for Certified Feed Management Planners

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Introduction

Nutrition, feed management and forage quality are the key ingredients in dairy cattle nutrient management. A National Feed Management Education Project has resulted in the development of a curriculum that addresses the integration of feed management and whole farm nutrient management. These include ration formulation for optimal supplementation of nitrogen and phosphorus, feed delivery, feed testing, and diagnostic tools to monitor results. Agricultural professionals in Pennsylvania, Virginia, and Maryland need to have an understanding of how precision feeding affects nutrient management and the implications to water and air quality. This is important for all watersheds in the Mid-Atlantic region, not solely the Chesapeake Bay watershed.

Currently nutritionists are becoming certified as feed management planners and eventually as technical service providers (TSP) with the Natural Resource Conservation Service (NRCS). To become a TSP, certified planners are required to write feed management plans. It is necessary to record and monitor information that will demonstrate that improvements are being achieved.

This fact sheet is a supplement to the Excel spreadsheets on “Monitoring Protein and MUN for Milk Cows” and “Monitoring Protein for Dry Cows and Heifers”. The Excel spreadsheets have been developed to provide tools for monitoring progress related to nitrogen importation on the farm over time. Implementation of the feed management plan requires that changes are documented.

Dry matter intake

The first part of the Excel spreadsheet addresses dry matter intakes. For herds feeding a total mixed ration (TMR), it is necessary to obtain the amount of as-fed feed delivered to the cows, the number of cows fed, and the amount of refusals. The TMR analysis should be sampled on the day feed intake is recorded. The percent dry matter of the TMR will be used to calculate dry matter intake.

For component-fed herds, all forages and concentrate mixtures should be tested for dry matter and nutrient content. The amounts of each ingredient should be estimated for a cow

representative of average production. The spreadsheet requires all ingredients fed be entered. This ration information is entered at the top of the worksheet. The results comparing actual and formulated dry matter intake should be recorded below.

Both spreadsheets (TMR and component feeding) have an example already entered. The actual dry matter intake will be used later in calculating dry matter intake efficiency and milk nitrogen efficiency.

Milk production

It is recommended to obtain both bulk tank milk weights (3 consecutive pick-ups) and if available, the closest DHIA test results. If the herd gets milk picked up every day enter a “1”, if it is every other day, enter a “2”. If the producer has milk component information

from the milk cooperative, those numbers should be used. Bulk tank milk weights are going to be more reflective of animal performance at the time that feed and manure sampling takes place.

Milk urea nitrogen (MUN)

MUNs are a tool for monitoring protein and carbohydrate nutrition of the ration. It is recommended that a bulk tank milk sample be taken on the same day as the ration and fecal samples. Contact your local DHIA to obtain a milk sample bottle and instructions on taking a bulk tank milk sample.

The worksheet is set-up to graph the bulk tank MUNs over time. If the herd is on DHIA and

only a certain group of cows are being sampled, then the group MUN value can be obtained from the DHIA reports, recorded and monitored over time (included in the worksheet). The recommended range for MUNs is 8 to 12 mg/dl. More information on interpreting MUNs can be found in the fact sheet MUN interpretation, DAS 2008-134.

Dry matter intake efficiency

Dry matter intake efficiency (DMIE) can be defined as the pounds of energy corrected milk produced per pound of dry matter consumed. Monitoring dry matter intake efficiency is a measure of how well nutrients are being converted into milk and components. In theory, it is a measure of how

efficient the animal is in turning nutrients into product. There is also an economic component to monitoring DMIE as it measures the impact on profitability. A table with benchmarks for DMIE is included in the Excel worksheet.

Milk nitrogen efficiency

For this tool to be effective, actual milk production, dry matter intake, ration crude protein percent and milk protein percent should be used. An average dairy should fall between 25 to 30% for milk nitrogen

efficiency. As protein and carbohydrate balance improve and rations are properly implemented, there are opportunities to maintain efficiencies over 30 percent.

Ration crude protein comparison between formulated and the actual ration

This worksheet is for animal groups fed a TMR. This tool is an excellent way to document how well the producer is implementing the paper ration and following good feeding management practices. This worksheet is setup so the crude protein percent from the formulated ration and the

TMR analysis are entered for each sampling period and then graphed. This is available for the milk cows, dry cows and heifers. The fact sheet titled "Resources for Sampling and Evaluating Forages and TMRs", DAS 2008-135 gives pointers on how to sample TMRs.

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