

# Profitable Dairy Diets Start and End with Dairy Managers

By Donna M. Amaral-Phillips



The fall season brings cooler temperatures and a slowing of fieldwork associated with harvesting crops needed to feed a dairy's milking herd, dry cows, and heifers. With this slowing of field tasks, attention is often switched to finalizing the collection of representative forage samples and subsequent analysis of harvested forages for their nutritional content, and ultimately, contracting for the grain mixes or commodities needed to feed the dairy herd for the remainder of the feeding season. To accomplish these tasks, one needs to work closely with their nutritionist to use the forage analysis results to generate or tweak diets to be fed for this feeding season. Once these diets have been formulated, correct and consistent implementation on farm becomes the responsibility of the dairy manager. Thus, the starting and ending places for profitable diets involve the dairy's manager.

## Diets Must Reflect an On-Going Analysis

The importance associated with ration balancing and the accurate on-farm implementation of these resulting rations has not changed with time. Balanced rations need to reflect the amount and quality of forages available to be fed and realistic production or growth expectation of the dairy cows and heifers that will be fed these diets. I still remember early in my career, seeing diets that reflected forages already fed out or a phantom "pasture forage" added to make sure the ration balanced. Hopefully, these days are long past. One easily forgotten aspect involves the concept that forage testing and ration balancing is an on-going process that needs to continue throughout the feeding year. It is not a one-and-done process. Changes in forage quality and cow performance need to be accounted for throughout the feeding season, not just at the start. Seeing that this process is not only initiated at the start of a new feeding season, but occurs on an on-going basis is the responsibility of the dairy manager, not the feed company per se. This process or at least a review of what is occurring on-farm should take place bi-monthly (larger herds) or at least every 4 to 6 weeks.

## Nutritionist's Tools Have Changed Over-Time

The tools, i.e. computer ration balancing programs, used to balance rations for various groups of cows and heifers have changed dramatically over the years. These changes reflect our increased understanding of the nutritionally-related needs of cows to produce milk or for heifers to grow more efficiently. Specifically, nutritionists have a better, but still not complete, understanding of how fermentation by the rumen microbes or bugs impacts the nutrients a cow can use to make milk and its components. We have also increased our understanding of how the cow herself uses and regulates the use of nutrients once they are absorbed from the digestive system. All of this information along with a better understanding of nutrients found, and not found, in both forages and grains are used to calculate the amount of many different nutrients supplied and an expected response from a combination of feeds.

Current ration-balancing computer programs are not "a plug in your forage results and then immediately spit out a least cost ration to feed". Today, nutritionists balance rations not for least cost, but for optimum performance. Using this concept should result in the most profitable feeding program where both cost and performance are integrated for the best result. Secondly, to calculate a diet for a group of cows or heifers, many different feedstuff combinations and feeding amounts may be tried before the best combination of ingredients is developed. This ideal combination and amounts fed of feedstuffs may be different between

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nutritionists, but hopefully share a common nutrient profile. Remember cows (and heifers) need nutrients (i.e. carbohydrates, known as starches and sugars, and specific amino acids found in proteins) to make milk, grow, and “walk about”, not specific ingredients. Thus, without a listing of the nutrients these rations are balanced for, comparison of diets or recipes from competing nutritional companies are difficult, especially if one just considers price alone. Different recipes may reflect a very different expected performance (milk production), mature weight of cows fed the diet, and/or ingredients used, and thus nutrient profile being provided.

Some nutritionists may develop a “base ration” that they believe best uses the forages found in their service area as well as purchased feedstuffs (grains mainly) they have available and are economical. Several “base rations” may be developed to reflect differing production and breed of cows reflecting different mature body weights. Rations for a particular farm then are balanced by tweaking or through minor adjustments in the amounts (or deletions) of feedstuffs found in the “base ration” to reflect a farm’s current forage quality and quantity available and cow performance. A trace mineral, vitamin and additive pack is then added to complete the ration. Thus, one may notice a common theme in ingredients between neighbors, even though the rations differ due to the quality of their forages.

Outputs from newer-age, computer ration balancing programs calculate the amount and/or concentrations of over 50 nutritionally-related nutrients and fractions impacting performance and this list continues to grow. Many of these calculated numbers reflect what potentially is available from the fermentation within the rumen and the impact these nutrients have on the cells in the mammary gland which synthesize milk fat, protein, and lactose, the major components of milk. Many of these calculated nutrients or fractions will be reflected in the calculated amount of metabolizable energy (ME) and metabolizable protein (MP) in a respective diet. Both of these calculated amounts reflect the amount of energy or protein that is available to the cow for milk production, growth and “just walking around”, also known as maintenance by nutritionists. Some computer programs will calculate what is termed ME or MP allowable milk or the amount of milk either the energy or protein supply should be able to support. This calculated production does not guarantee that this is the performance you will get; just that the calculated amount of ME or MP should support this production after maintenance needs are accounted for. If one wanted to compare rations, comparing these calculated values might be a place to start assuming dry matter intakes are similar between diets.

### **Do you have a Nutritionist or a Feed Person?**

To use these computer programs, the user needs to have a sound, comprehensive, and up-to date understanding of processes that occur in the cow’s rumen, digestive tract, and body tissues and organs, such as the liver and mammary gland. This knowledge is then coupled with an understanding of which feedstuffs can be used to supply the needed nutrients. This knowledge base is needed to detect when shortages or excesses are calculated and how to correct the imbalance. As one might guess, this skill set requires attending on-going educational opportunities. Today these educational opportunities can be done in-person or electronically from a remote location. The key is they are completed on an on-going basis and the person understands and can apply the material covered in these trainings. With the new Dairy NRC (publication that explains nutritional needs), protein nutrition, in particular, will see many changes which will be included in the next generation of ration balancing programs. Listen to your nutritionist and see if they mention if they have attended trainings recently. Not only will they learn from these opportunities, but you will also, and this information can have a positive impact on the profitability of your dairy.

### **A Dairy Manager Controls His/Her Destiny**

Understanding some of the basic principles behind balancing rations and the importance of implementing certain components on-farm are critical skills for a dairy manager. The key here is to know what questions to ask and detect when problems may be starting to occur, not after they have had a major impact on milk production, health or reproduction of cows or heifers. Recently, I had the opportunity to “judge” a high school dairy management competition. When asked questions about what the animals in the scenario were being fed, for some teams it was very obvious that their advisors had taught them a generic response when they did not know or understand the concept being asked. When paraphrased, their answer essentially said “it’s not my responsibility- ask or work with their nutritionist”. Unfortunately, this type of response is way too common in the real world. This approach is contrary to that displayed by top quality dairy managers. Well-versed dairy managers are able to understand the impact of various nutritional components of diets they are feeding to their herds, and this information goes beyond knowing the amount added to the TMR wagon of each feedstuff and the dry matter intake of various groups of cows. Taking time to understand the underlying concepts of nutrition can help increase the profit resulting from feeding rations to various groups of cows and heifers. Fruitful conversations can be had with their nutritionist, including exploring other options based on science and expected responses and ease of implementation on-farm rather than just blindly following the recommendations.

As the title of this article states, a profitable dairy diet starts and ends at the control of the dairy’s manager. Diets need to reflect the forages currently being fed, representative forage (and maybe even by-products) samples collected and analyzed on an on-going basis, and these results used to balance or tweak rations throughout the feeding season. Forage quality does not stay constant throughout the feeding season. Nutritionists now balance diets to optimize the best choice of ingredients to result in the best performance—at least on paper. These rations are balanced using computer ration programs that incorporate many different parameters that describe what occurs in the rumen and in the cow herself. Technology and our understanding of what occurs inside the cow or heifer helps one formulate the best combination of feedstuffs, but the dairy manager still needs to understand nutritional principles. This understanding is needed to apply, or as we call it in the industry, feed these formulated diets.