

# Common Feeding Problems and Their Solution in Dairy Herds

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Nutritional consulting is an important component of a herd health program. Feed costs form approximately 50-60% of the total cost of milk production, and so even minor improvements in feeding efficiency are directly reflected in higher farm profit. Furthermore, since nutrition impacts on reproductive performances and metabolic disease prevalence, it has an indirect effect on economic efficiency as well.

The objectives of a herd health nutritional program are to optimize the long term profitability of the farm by "controlling" (not necessarily eliminating) the prevalence of nutritional diseases and to ensure optimal production efficiency (economic conversion of inputs into outputs). Feeding problems present themselves in a variety of forms as deviations from these objectives.

Historically, feeding problems have been investigated by emphasizing nutrient imbalances that either cause a specific metabolic disease problem or impair a production output (milk or reproduction). Many feeding problems result not only from nutrient imbalances but from management inefficiencies as well. Successful nutritional consulting must evaluate the role of both factors in problem solving and offer solutions that consider the total farm economic efficiency.

For the purpose of discussion, problems in the feeding management program can be divided into two main areas: 1) feed selection, and 2) feed delivery. The common problems of each of these areas will be discussed.

## Feed Selection

Efficient economic selection of appropriate feeds is the first step that affects the total efficiency of a feeding program. Once an inefficient feed is purchased, it is often difficult to make up that inefficiency in enhanced production efficiency. Most farms produce their own forages and nutritionally complement them by purchasing energy and protein sources and supplements. The higher the nutrient quantity in forages the lower is the requirement for purchases of these nutrients. The type of energy and protein supplement that should be selected is a function of its price and price stability, required nutrient content, flexibility, storage characteristics and home grown forages.

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The nutrient content of a feed ingredient can be determined by taking an appropriate sample and having it analyzed by a competent forage lab. It is important to realize that there is considerable variability in the ability of labs to measure various nutrients and that this variability is not constant across all nutrients. In general, dry matter, fiber (energy), protein, calcium and phosphorus have a coefficient of variation (standard deviation/mean value) of approximately 10% while trace elements are on the order of 20%. To overcome this magnitude of variation one has to resort to repeated analysis of the feed ingredient.

To help evaluate the efficiency of feed selection a variety of tools have been developed. The economic substitution value of a feed is based on the assumption that the economic value of a feed is a function of the sum of the value of its nutrients. However, with these types of calculations the value of the "nutrient density" is not taken into account. Hence the substitution value is the amount one should be willing to pay in alternative feed sources to attain the same amounts (not nutrient density) of nutrients. Linear programming techniques can be used to evaluate a feed ingredient by formulating feed combinations constrained to the nutrient density of the feed ingredient and then comparing cost.

The feed storage facilities available on the farm must also be considered when selecting feed ingredients. Some feed ingredients (wet brewers grains) have unique storage requirements. Many feed storage facilities require certain feed processing to minimize residual feed accumulation that can result in moldy feed. The volume capacities of the storage facilities are important in determining which price break level the producer will be facing. Small herds in geographic clusters can organize into collectives to purchase various feed inputs at the lower price breaks that large herds receive. Feed ingredients which have seasonal price fluctuations should be purchased at appropriate times in the year to minimize the total purchase and storage cost. Furthermore, the total feeding cost can potentially be reduced by strategically planning the purchases of feeds rather than allowing random purchases to occur.

The flexibility of a feed ingredient is also an important characteristic to consider during the selection process. Certain feed ingredients are flexible in that they can be used across lactation levels and in dry and heifer rations or can be immediately adjusted according to nutrient changes in forages or to changes in prices. Other feed ingredients, because of their nutrient composition, might have

limited flexibility.

#### Feed Delivery

The objective of an economically efficient feed delivery system is to deliver the required nutrients to the various animal groups on the farm at a minimum cost. Flexible feeding systems allow changes to be made easily as the production profile of the herd changes or as nutrient quality or cost of a feed ingredient changes. Many feed delivery systems are a compromise between total mixed rations and individual animal rations and a function of the physical nature of the farm and its management. Regardless of the system, feed measuring devices must be calibrated to ensure that the appropriate feed amounts are used when mixing grains and in allocation to animals.

Nutrient imbalances can result from inappropriate levels in the feed at the start, or from poor feed bunk management practices resulting in imbalanced nutrient intakes. For example inadequate bunk space (less than 30 inches/cow), uncovered feed bunks, dirty and unshaded water can cause reduced dry matter intakes. Many feed delivery problems manifest themselves by high metabolic disease prevalence, inefficient milk or fat production, and/or impaired reproduction.

#### Common Metabolic Diseases

Milk fever	excessive calcium, phosphorus, or both in dry cow rations
Ketosis	underfeeding ketosis—adequate energy intake feeding ketosis—excessive butyrate spontaneous ketosis—lipogenic and/or glucogenic imbalance
Fat cow syndrome	overfeeding energy in late lactation and in the dry period
Hypomagnesemia	low magnesium

Ruminal acidosis      pulsatile grain feeding; inadequate buffering in the diet

#### Common Production Problems

Milk fat depression	low fiber content; glucogenic/lipogenic imbalance
Poor peak production	low energy or protein intakes and/or inadequate body reserves
Poor persistency	rapid changes in energy intake
Inefficient feed delivery	overfeeding crude protein to low production levels or dry cows

#### Common Reproduction Problems

Retained placenta	deficiency of selenium, Vitamins A and E
Infertility	manganese deficiency, protein excess, energy deficiency

In summary, most farm feeding problems are the result of combinations of inefficient feed selection and delivery. Inefficient feed selection results in high input cost while inefficient delivery results in impaired physical conversion of feed into output. The economic magnitude of both areas must be considered during nutritional problem solving.

#### References

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