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Feed Formulation: "Fact or Fiction"; a.k.a. "The Ham Sandwich "

Three basic formulation methods are available to feed manufacturers:

- Least Cost
- Fixed Formulas
- Constant Nutrition Controlled Formulation

Each method uses a different goal and provides very different results.

The least cost method is the most widely used by feed companies and perhaps the most appropriate for the commercial livestock industry. The primary goal is to provide a set of nutrients at the lowest possible cost. Therefore the primary factor for this method is money. The level and type of ingredients will vary dramatically depending on ingredient prices and availability. It is not uncommon for major ingredients to be totally replaced. A classic example would be exchanging milo for corn. The key to using this method successfully is to have a good understanding of the nutrients in each ingredient and their availability for the species for which you are formulating the diet.

As will be true for all these systems, the better the understanding of the nutrient requirements of the animal, the better the diet.

The second method is fixed formulation. The main feature of this method is its ease of use. It is basically a fixed recipe that is used over and over. The critical flaw in this method is that ingredients are not the same from batch to batch, and therefore tremendous variations in nutrients occur. University developed diets are frequently formulated in this manner as a way of presenting a standard diet. One of the large misinterpretations of this type of formulation is the mistaken belief that it provides a consistent level of nutrients, when in fact it may deliver the greatest variation of nutrients of any method.

The third method is constant nutrition controlled formulation. The greatest benefit of this method is accuracy. The challenge, however, is that it is extremely difficult to do and therefore few feed mills utilize this type of formulation method. The biggest drawback of this method is cost, since formulating a diet this way requires many steps. A couple of these steps are: routine and on-line testing of ingredients, instituting and maintaining a preferred supplier program in order to maintain ingredient quality, computerizing formulations and mixing systems, and utilizing a long term analysis program to improve accuracy. Another feature frequently employed with this method is to use a wider variety of ingredients, which increases the effort needed to analyze but reduces the risk to the end user if or when a particular ingredient becomes scarce, contaminated or fluctuates widely in nutrient content.

All three methods have their place, but for zoological collections, constant nutrition with a controlled formulation should prove the most consistent and beneficial for the animals, and the best method by which to determine nutrient needs.