Meeting Nutritional Needs of Animals

When trying to feed an animal appropriately in order to meet production goals, the producer needs to consider both the nutrients provided in the feed and the nutrients needed by the animal. In order to meet the animal's nutritional needs, the nutrients in the feed have to match the animal's requirements.

Information Sources for Nutritional Requirements

A number of sources provide information that the producer can use to help him or her meet an animal's nutritional needs. For example, University Extension has livestock and dairy specialists and agricultural publications that are good information sources on nutritional needs. Extension guides that list nutritional information based on the animal's life stage, size, and weight are available for many animal species. The information is usually based on the work of the National Research Council (NRC) as well as research conducted in Missouri.

Another source of information is textbooks on animal nutrition. Many textbooks have tables, often in an appendix, that provide such information. Like the University Extension publications, textbooks list the animal's nutritional needs based on research and other publications.

Often feed companies and feed dealers can supply a producer with information on nutritional needs. The main business of feed companies and dealers is to sell products for feeding animals. Companies often put out publications about nutritional requirements of animals. The individual dealer also may make recommendations to the producer.

Finally, the NRC has conducted research to provide information on the minimum nutritional requirements needed by an animal to function properly. The NRC puts out its own publications detailing research findings.

Steps in Meeting an Animal's Nutritional Needs

Some general steps should be followed in order to meet the nutritional needs of animals. The goal of the step-by-step process is to meet the animal's needs through the nutrients provided in the feed.

When trying to meet nutritional needs, the animal and the type of feed have to be taken into consideration.

1. Research needs to be done to learn the nutritional needs of the animal and the nutrient content of feeds. The first step is to find one of the information sources listed above. The source can then be used to obtain information on the requirements of that animal. Information on feeds may sometimes be found in the same source that provides data about the nutritional requirements of an animal. If information on feeds is not included, however, another source must be found.

2. After a source has been obtained, the nutritional needs of a particular animal need to be identified. This step has several parts. First, the life stage of the animal has to be identified. For example, a producer would have to know whether a cow was growing or breeding. Then the weight and frame size of the animal need to be determined. The producer next needs to determine the animal's desired performance, which is sometimes referred to as the rate of gain or average daily gain (ADG). Using this information, the producer can use the source to look up all the nutrients needed by the animal. Table 4.1 shows a section of a table that supplies information on nutrient requirements.

3. The next step in meeting an animal's nutritional needs is to identify the nutrients that are available in a specific feed. This part of the process is as important as identifying the animal's needs, since the feed must supply the required nutrients. This step also has several parts. First, the feeds that may be used must be identified. Many feeds may be available to the producer, such as corn, soybean meal, grass, and hay. Next, a version of a particular feed should be chosen to meet the animal's nutritional needs. For example, whole seed soybeans have a different amount of nutrients than dehulled soybean meal. The producer needs to pick the right one for his or her purposes. In order to pick the appropriate feed, the producer

Table 4.1 - Nutrient Requirements Table

Weight (lbs.)	ADG (lbs.)	DM[b] (lbs.)	Protein (lbs.)	Ne_m Mcal	Ne_g Mcal	TDN (lbs.)	Ca (lbs.)	P (lbs.)
Medium-Frame Steer Calves								
400	2.5	11.0	1.56	3.81	3.16	8.1	.074	.033
400	3.0	10.0	1.65	3.81	3.86	8.5	.086	.037
500	0.5	11.5	0.98	4.50	0.64	6.2	.028	.019
500	1.0	12.3	1.16	4.50	1.37	7.2	.039	.024
500	1.5	12.8	1.33	4.50	2.13	8.1	.051	.028
500	2.0	13.1	1.49	4.50	2.93	8.8	.061	.031
500	2.5	13.0	1.63	4.50	3.74	9.6	.072	.035
500	3.0	11.8	1.69	4.50	4.56	10.0	.081	.037
600	.05	13.2	1.08	5.16	0.73	7.1	.030	.023
600	1.0	14.1	1.26	5.16	1.57	8.2	.039	.026

*From *Nutrient Requirements for Growing and Finishing Beef Cattle (G2067)*, University Extension agricultural publications, University of Missouri-Columbia

has to know what level of nutrients is provided by that specific feed, which can be learned from the source used. Table 4.2 shows a portion of a sample feed nutrient composition table.

4. The final step is to match the feed to the animal's nutritional requirements to meet its needs. This step is accomplished by balancing a feed ration, which is covered at length in the next lesson.

Sources of Nutrients

In order to be able to supply the appropriate nutrients to an animal, a producer needs to know the sources of those nutrients. The six basic nutrients needed in an animal's diet—water, proteins, carbohydrates, fats vitamins, and minerals—can be provided through various sources.

- Water – Found in fresh water or in feeds, which contain water

Table 4.2 - Feed Composition Table

	Dry Matter %	Crude Protein%	Ne_m Mcal/lb	Ne_g Mcal/lb	TDN %	Fat %	Crude Fiber %	Calcium %	Phos-phorus %	Potas-ium %	Sodium %	Sulfur %	Zinc PPM
Concentrates													
Molasses													
Beet	78.0	6.6	0.68	0.45	62	0.2	0.0	0.13	0.02	4.73	1.15	0.47	14
Cane	75.0	4.4	0.58	.037	54	0.1	0.0	0.75	0.08	2.88	0.17	0.35	23
Cane, dried	94.0	9.7	0.70	0.44	66	0.8	6.3	1.03	0.14	3.38	0.19	0.43	31
Oats													
Grain	89.0	11.8	0.75	0.49	69	4.8	10.8	0.06	0.34	0.39	0.07	0.20	37
Mill Byproduct	89.0	7.1	0.34	0.00	29	2.3	22.3	0.11	0.21	0.53	-.-	0.21	-.-
Groats	90.0	15.9	0.95	0.65	85	6.2	2.5	0.07	0.43	0.35	0.05	0.20	0

*From *Feed Composition Tables (G2051)*, University Extension agricultural publications, University of Missouri-Columbia

- Protein – Amino acids found in animal tissues, grains, and legumes
- Carbohydrates – Sugars, starches, or fibers found in grains and forages
- Fats – Fatty acids found in animal tissues, fats, and grains
- Vitamins – Found in grass, sun-cured hay, and commercial feeds
- Minerals – Found in plant and animal tissues and commercial feeds

Summary

Information on nutritional requirements of animals and the nutrient content of feeds can be learned from many sources. Once sources of information on requirements and the nutrients in feeds are found, the animal's needs may be met by identifying its requirements and then the nutrients of the available feed. Each of the six basic nutrients can be provided by a number of sources.

Credits

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