

## POULTRY NUTRITION RESEARCH

Poultry feed is food for farm poultry, including chickens, ducks, geese and other domestic birds. Before the twentieth century, poultry were mostly kept on general farms, and foraged for much of their feed, eating insects, grain spilled by cattle and horses, and plants around the farm. This was often supplemented by grain, household scraps, calcium supplements such as oyster shell, and garden waste. Animals eat to acquire the energy and building materials that they need to live and grow. Animals use energy to perform normal body functions such as breathing, walking, eating, digesting, and maintaining body temperature. Nutrients provide poultry the energy and material needed for the development of bone, flesh, feathers, and eggs. Energy is not a nutrient but a property of nutrients. Energy is a principal requirement for living organisms and as such, most nutrients function to a large extent as sources of energy. As indicated previously, gross energy represents the total energy available in a substance; however, living organisms are not capable of capturing all of the energy in the foods they consume because of digestive and metabolic inefficiencies. Thus, variable amounts of the gross energy in feeds are actually used in productive body functions. This book covers all aspects of animal nutrition especially that relevant to the degree course in Veterinary Science, and would be of immense value to the students who undertake the course.

**Contents:** Poultry Nutrition and Feed; Research in Poultry Science; Feeding Systems; Feed Composition; Animal Nutrition; Feed Utilisation and Nutrition; Feedstuffs, Nutrition and Diets; Poultry Farming.

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carbon, when an equal quantity is measured. Nitrogen is the predominant source of energy for organisms, through the nitrogen cycle, with various minerals and vitamins being equally vital. Nitrogen is also the primary energy for regular metabolic rates, this necessitates greater sums of plants for herbivore digestion, to absorb significant energy for sustenance and stamina.

As farming became more specialized, many farms kept flocks too large to be fed in this way, and nutritionally complete poultry feed was developed. Modern feeds for poultry consists largely of grain, protein supplements such as soybean oil meal, mineral supplements, and vitamin supplements. The quantity of feed, and the nutritional requirements of the feed, depend on the weight and age of the poultry, their rate of growth, their rate of egg production, the weather (cold or wet weather causes higher energy expenditure), and the amount of nutrition the poultry obtain from foraging. This results in a wide variety of feed formulations. The substitution of less expensive local ingredients introduces additional variations.

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– Author

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# 1

## Poultry Nutrition and Feed

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In terms of cost, feed is the most important input for poultry production, and the availability of low-priced, high-quality feeds is critical for the expansion of the poultry industry. For maximum performance and good health, poultry need a steady supply of energy, protein, essential amino acids, minerals, vitamins and, most important, water. Recent advances in poultry nutrition have focused on three main areas:

1. Developing an understanding of nutrient metabolism and nutrient requirements;
2. Determining the availability of nutrients in feed ingredients; and
3. Formulating least-cost diets that bring nutrient requirements and nutrient supply together.
4. Information about this topic is available from this website, through links to information notes on specific subjects.

Practical poultry diets are formulated from a mixture of ingredients, including cereal grains, cereal by-products, fats, plant protein sources, animal by-products, vitamin and mineral supplements, crystalline amino acids and feed additives. In developing countries, the increasing cost and decreasing supply of traditional feedstuffs are expected to constrain the future expansion of poultry production. This situation highlights the urgent need to improve utilization of the wide range of alternative feedstuffs available in these countries. In many circumstances, feed resources are either unused and wasted, or used inefficiently. The use of most alternative feedstuffs is currently negligible, owing to constraints imposed by nutritional, technical and socio-economic factors. However, unlike intensive commercial poultry production systems, family poultry units and semi-commercial systems are well-suited to the inclusion of these feedstuffs.

A major nutritional problem in developing countries is the biological and chemical contamination of poultry feeds, which may have serious consequences on bird performance and the safety of poultry products for humans. Of the potential contaminants, mycotoxins are the most widespread,