Book reviews

Ausschuss für Bedarfsnormen der Gesellschaft für Ernährungsphysiologie (Committee of Nutrient Requirement of the Society of Nutrition Physiology): Empfehlungen zur Energie und Nährstoffversorgung der Legehennen und Masthühner (Broiler) (Recommendations for the energy and nutrient supply of laying hens and broilers)


The book contains six chapters in total which deal with the energy, protein and amino acid, major and trace mineral, essential fatty acid, and water- and fat-soluble vitamin requirements of laying hens and broilers. Requirements or recommendations for supply data for energy and nutrients were derived in different ways. Whereas energy, protein and amino acid and major mineral requirement were derived by the so-called factorial approach, the recommendations for the supply of the remaining nutrients were obtained by evaluating a number of published experiments. Moreover, the latter recommendations for supply were given not only for laying hens and broilers, but also for additional gallinaceous poultry, such as chicks, breeders and pullets.

The different approaches used to derive data imply that these values have to be interpreted in different ways. The factorial approach models the requirement by adding the particular factors of total requirement, namely that for maintenance, growth and/or egg production with consideration of net requirement and utilization figures. Therefore, the so-derived requirement represents the requirement per se and does not include safety margins which must be taken into account in practical feed formulation. In contrast, recommendations for supply with vitamins, trace minerals and essential fatty acids include both the physiological requirements and respective safety margins.

Energy requirement was derived for laying hens and broilers by the factorial approach using literature data for energy maintenance requirements, energy concentration of eggs and of live weight gain. Furthermore, different housing and keeping conditions were considered for the hen’s energy maintenance requirement. Finally, tables summarizing factorial and total energy requirements were given for selected levels of performance.

Protein requirements were also modeled by the factorial approach assuming an ideally composed protein. These crude data on total alpha-amino-nitrogen requirements were
subdivided into the requirement of the particular essential- and semi-essential amino acids. It should be noted that the requirement of protein and of amino acids is given as gross requirement. A further step toward digestible requirement figures was not taken, and reasons why were given. Tables with amino acid requirements for some relevant performance profiles are given at the end of this chapter.

The need to supply poultry with the essential fatty acids linoleic acid and alpha-linolenic acid was justified on the basis of a critical literature review. Recommendations for supply with these fatty acids were given at the end of this chapter.

Requirements of major minerals, i.e. calcium, phosphorus, magnesium, sodium, chloride and potassium were also derived according to the factorial approach. Data for mineral maintenance requirements, for mineral composition of eggs, and live weight gain were obtained from a review of literature data. Phosphorus requirements were formulated as gross requirements rather than as requirements for available or non-phytin-phosphorus, mainly because of uncertainties with respect to definition and quantification of these terms.

Recommendations for the supply of gallinaceous poultry with the trace minerals iron, copper, zinc, manganese, iodine and selenium as well as for water-soluble (thiamin, riboflavin, niacin, Vitamin B₆, B₁₂, pantothenic acid, biotin, folic acid and choline) and fat-soluble vitamins (Vitamins A, D₃, E and K₃) are based on a critical review of the literature. The recommended values are given in tables and include safety margins to account for practical purposes.

In summary, the book gives not only suggestions on energy and nutrient requirements, and recommendations for supply, but also provides an up-dated literature review on the particular issues. Consequently, gaps in knowledge on requirements of poultry were identified and future research needs were determined.

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Feeding Systems and Feed Evaluation Models

The production from farm livestock is concerned with providing food and clothing of animal origin for man. Animal production science underpins this goal and provides the