ANIMAL NUTRITION ACTIVITIES AT THE NATIONAL ACADEMIES-NATIONAL RESEARCH COUNCIL

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One of the primary missions of the Board on Agriculture and Natural Resources of the National Academies is the publication of a series of reports that deal with animal nutrition. The most well known of these reports are those on *Nutrient Requirements of Animals*, but periodically additional topics that relate to animal nutrition are addressed. There are currently three projects on animal nutrition (*Mineral Tolerance*, *Nutrient Requirements of Horses*, and *Nutrient Requirements of Small Ruminants*). Each of these will be discussed briefly. For *Mineral Tolerance*, most of the discussion below is taken directly from the Preface of the report.

In 2003, the National Research Council's Committee on Animal Nutrition convened an ad hoc committee to conduct a thorough review of the scientific literature related to minerals and toxic substances in the diets and water for animals and to update the 1980 edition of *Mineral Tolerance of Domestic Animals.* In particular, the committee was asked to provide recommendations on animal tolerances and toxic dietary levels, and identify minerals that pose potential human health concerns. A nine-person committee of scientists specializing in nutrition, toxicology, and veterinary medicine accepted this task. Individual members brought to this project diverse expertise and perspective on the impact of nutrition on the health of fish, poultry, livestock, companion animals, and humans. The committee met three times and had monthly teleconferences over a period of more than a year. A prepublication version of this report was released to the sponsor (US Food and Drug Administration) in July, and the report is currently in the final stages of publication at the National Academies Press. In preparing the report, the committee recognized that much of the information in the 1980 publication was still relevant, but that this historic foundation needed to be re-evaluated in the context of newer information on the methods of mineral analysis, mechanisms of homeostasis and toxicity, and appropriate indices of animal health and well-being. Consequently, a re-analysis of the historic literature is synthesized with the recent literature to form the recommendations in this report. This edition considers a greater breadth of animal species than the past edition and expands the coverage on the metabolism and mechanisms of toxicity of minerals, methods and problems in mineral analysis, and the relationships between mineral exposure of animals and the mineral levels in animal products destined for human consumption. New chapters provide additional focus on acid-base balance, nitrates, and water quality. Finally, this edition has placed increased emphasis on the safety of animal products in the human diet as criteria for setting maximum tolerable levels of minerals in the feed and water of farm animals. The recommendations in the 1980 report were widely cited and served as the basis of decisions made by regulatory agencies and by practicing nutritionists responsible for the formulation of animal diets. The previous report was also used extensively in teaching, research, and veterinary practice. The new edition is a major update of this valuable resource.

A project to produce a new revision of the *Nutrient Requirements of Horses*, last updated in 1989, was approved in the fall of 2004 and a working committee was formed in early 2005. The

project was initiated to provide a review of the scientific literature related to the nutrition of horses, ponies, and other equids and to develop summary information on the nutrient requirements of these animals during various physiological states. As with all revisions of publications in this series, the primary emphasis is a review of scientific data published since 1989 on requirements for individual nutrients. The new information is being integrated with older data to product an updated set of nutrient requirements for horses and ponies in all stages of life. Information on composition of feeds, feed additives, and other compounds routinely fed to horses is also being updated. In addition, there are several new or greatly expanded sections. There will be a chapter on feeding behavior and general considerations for feeding management of horses. This chapter will include items such as selection of forages and concentrates, feed analysis and feed tag information, feeding horses in hot and cold weather, and nutrient management and the environment. Another chapter will discuss unique aspects of equine nutrition and review topics such as laminitis, colic, feeding aged horses, and the feeding and management of wild equids in captivity. Other chapters have an expanded coverage of the physical characteristics and suitability of feeds, feed processing and manufacturing, and feed analysis. A significant expansion from previous editions of the publication is that this publication will include other equids besides horses, and there is a chapter devoted to donkeys. A computer model will accompany the publication. The model will allow the user to select specific stages of the life cycle and various other conditions, and will calculate nutrient requirements based on the inputs provided. The committee revising the publication has met four times and is currently preparing the document for review by an independent group of experts.

The third project is titled *Nutrient Requirements of Small Ruminants*. This will be a revision of two reports *Nutrient Requirements of Goats* (1981) and *Nutrient Requirements of Sheep* (1985). In the update, sheep and goats will be combined into one publication and information on cervids and New World camelids will be included. All types and phases of small ruminant animal production are being addressed. Because there are many more scientific papers on traditional domestic animals (sheep and goats) than on wild and exotic species (e.g., deer and llamas), the sections on sheep and goats will make up the largest portion of the publication. In addition to coverage of all the major nutrients, it is anticipated that the publication will have chapters on anatomy, digestive physiology, and nutrient utilization; ingestive behavior and feed intake; plant factors affecting nutrient availability; feeding practices; and environmental impact. Other special considerations for ruminants, such as bloat, rumen acidosis, enterotoxemia, and parasitism will also be covered. The committee writing the publication has met three times and is currently preparing the document for review by an independent group of experts.