

**Applied Animal Nutrition for Livestock,
Poultry, and Aquaculture**

Applied Animal Nutrition for Livestock, Poultry, and Aquaculture

Dr. Sudhanya Nath

Additional Veterinary Assistant Surgeon Tangi-Choudwar, Cuttack
Fisheries & Animal Resources Development (F&ARD)
Department, Government of Odisha

Dr. Ankita Patel

PhD scholar, Animal Nutrition Division
ICAR-NDRI, Karnal, Haryana

Mrs. Pooja Mahajan Kadam

Senior Research Fellow
Department of Zoology, Yeshwant Mahavidyalaya, Nanded, (MH)

Dr. Prajwalini Singh Thakur

Assistant Professor (Veterinary Physiology)
Krantisinh Nanapatil College of Veterinary Science, Shirwal



VITAL BIOTECH PUBLICATION

Kota, Rajasthan, India

<http://www.vitalbiotech.org/bookpublication/>

An International Publishers

VITAL BIOTECH get Accredited by following International organization



<https://www.portico.org/publishers/vital/>

101 Greenwich Street, 18th Floor
New York, NY 10006

Copyright © 2026 VITAL BIOTECH PUBLICATION

Published by Vital Biotech Publication

First Edition: 2026

All Rights Reserved

No part of this book may be reproduced in any form, by photostat, microfilm, xerography, or any other means, or incorporated into any information retrieval system, electronic or mechanical, without the written permission of the publisher.

Product Form:

Digital download, online and hard bound

Edition:

ISBN: 978-93-48793-87-4

Head, Production (Higher Education and Professional) & Publishing Director

Dr. Jitendra Mehta

Product Manager

Aman Saxena

General Manager

Jaya Mehta

Graphic Designer

Avneet Kaur

Information contained in this work has been obtained by Vital Biotech Publication (India), from sources believed to be reliable. However, neither Vital Biotech Publication (India) nor its authors guarantee the accuracy or completeness of any information published herein, and neither Vital Biotech Publication (India) nor its authors shall be responsible for any errors, omissions, or damages arising out of use of this information. This work is published with the understanding that Vital Biotech Publication (India) and its authors are supplying information but are not attempting to render engineering or other professional services. If such services are required, the assistance of an appropriate professional should be required.

Office Address:

VITAL BIOTECH PUBLICATION

772, Basant Vihar, Kota,

Rajasthan-324009 India

Visit us at: <http://www.vitalbiotech.org>

Contact No. +91-9784677044

Printed at: Vital Biotech Publication, Kota

Preface

Animal nutrition is a cornerstone of efficient and sustainable animal production systems, directly influencing growth, reproduction, health, product quality, and economic returns. The book, *Applied Animal Nutrition for Livestock, Poultry, and Aquaculture*, has been developed to provide a comprehensive understanding of nutritional principles and their practical applications across diverse animal production sectors.

Rapid advances in nutritional science, feed technology, biotechnology, and precision feeding have transformed modern livestock, poultry, and aquaculture industries. At the same time, rising feed costs, environmental concerns, climate variability, and the need for sustainable production demand innovative nutritional strategies that optimize animal performance while minimizing resource use and ecological impact.

This volume brings together contributions from researchers, academicians, nutritionists, and industry professionals to present current knowledge on nutrient requirements, feed ingredients, feed formulation, digestive physiology, feed additives, nutritional management, and emerging technologies. Special emphasis is placed on species-specific feeding practices and sustainable approaches to enhance productivity, animal welfare, and environmental stewardship.

The editors hope that this book will serve as a valuable resource for students, researchers, extension personnel, veterinarians, nutritionists, and animal production professionals. We sincerely acknowledge the efforts of all contributors and reviewers whose expertise and dedication have made this publication possible. It is our hope that this volume will contribute to advances in animal nutrition and sustainable food production systems.

Dr. Sudhanya Nath
Dr. Ankita Patel
Mrs. Pooja Mahajan Kadam
Dr. Prajwalini Singh Thakur

Dated - 30 April, 2026

CONTENTS

S. NO.		PAGE NO.
1.	Principles of Animal Nutrition and Feed Science <i>Sudhanya Nath</i>	1-12
2.	Nutrient Requirements of Livestock Species <i>Ankita Patel</i>	13-24
3.	Poultry Nutrition and Feeding Strategies <i>Pooja Mahajan Kadam</i>	25-36
4.	Aquaculture Nutrition and Feed Management <i>Prajwalini Singh Thakur</i>	37-46
5.	Feed Ingredients: Classification and Nutritional Value <i>Rajbir Singh, Shikha Yadav, Zufasha Anjum, Gurde Akshay Anil, Mala Rathore</i>	47-58
6.	Ration Formulation Techniques and Feed Optimization <i>Raj Kumar, Zufasha Anjum, Deepa Bhatt, Shailesh Kumar Gupta, Gurde Akshay Anil</i>	59-70
7.	Digestive Physiology and Nutrient Metabolism in Animals <i>Shalu Singh, Yashesh Singh, Shailesh Kumar Gupta, Gurde Akshay Anil</i>	71-82
8.	Feed Processing, Storage, and Quality Control <i>Sudhanya Nath, Ankita Patel</i>	83-94
9.	Nutritional Deficiencies and Disorders in Animals <i>Pooja Mahajan Kadam, Prajwalini Singh Thakur</i>	95-106
10.	Sustainable and Precision Feeding in Modern Animal Production <i>Gurde Akshay Anil, R Bhargavi, Priyanka Acharya</i>	107-116

