

NEW HORIZONS IN POULTRY FARMING

Poultry sector is presently at a crucial stage facing myriads of challenges that have to be tackled judiciously. The escalation in the demand for the poultry products like egg, meat and processed items has to be made resilient in terms of sustainable production system i.e. optimum feed utilization efficiency, biotic and abiotic stress owing to the variation in climate and environments perturbations, along with the health and management. Apart from above said issues that are of major importance and have to be dispensed meticulously, other underlying issues that has been largely ignored is the necessity of making poultry production remunerative for the poultry farmers.

Book entitled 'New Horizons in Poultry Farming' is an edited book of basic concept of poultry production. Book chapters of poultry farming has been contributed by the various scholars and faculty members pertaining to various area of Nutrition, Physiology, Disease and Health, Housing, Management and Post-harvest Technology, Stress management, Environmental Hygiene, Welfare, Waste Utilization and Organic farming etc.

This book is useful for PG, Ph.D. students, field Veterinarians as well as Faculty to refresh and upgrade their scientific knowledge of poultry farming.

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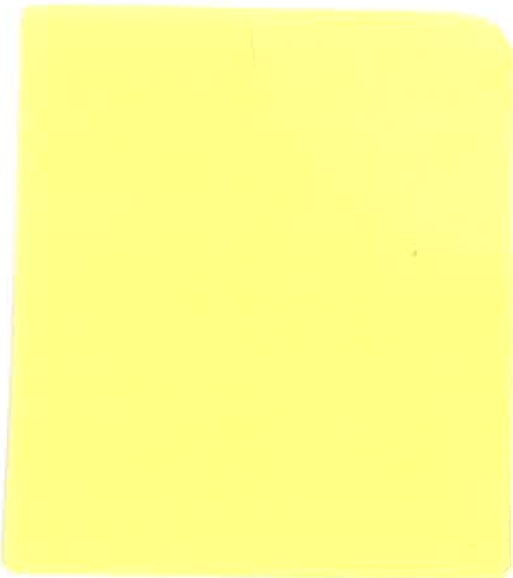
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About the Authors



Dr. Om Prakash Dinani was born on June 30, 1981 at Village-Belgahna, Bilaspur district of Chhattisgarh. His mother late **Smt. Puspa Dinani** is motivator of his life. His father **Shri Narayan Das Dinani** is working as a Head master in the department of tribale welfare, Chhattisgarh government.

He has secured the 1st rank in all classes from class 1 to 12, passed from Govt.B.H.S.S.,Belgahna, Bilaspur, (C.G.). He graduated (B.V.Sc.&A.H.) from College of Veterinary Science & A.H., Anjora, Durg (C.G.), obtained M.V.Sc.and Ph.D. in Poultry Science from IVRIDU, Izatnagar (U.P.) and PGDAEM from MANAGE, Hyderabad securing 1st rank.

He has joined the post of Assistant Professor in the Department of Instructional Livestock Farm Complex at College of Veterinary Science and A.H., Anjora, Durg on 29 June, 2012 under Chhattisgarh Kamdhenu Vishwavidyalaya, Durg, securing 1st rank in the Assistant Professor selection. Before joining CGKV, he has also worked as a Veterinary Assistant Surgeon in Livestock Development Department, Govt. of Chhattisgarh from 06.01.2010 to 28.06.2012, securing 1st rank in Chhattisgarh Public Service Commission.

He has been also awarded ICAR JRF AIR 13th (2008) and ICAR SRF AIR 1st (2011). He has been also qualified mains examination for ASRB in the year 2012 and 2015. He has also received State level Krishi Shiromani Award from honourable Governor of Chhattisgarh state in the year 2015. He has received National award of Dr. D. Choudhary best Ph.D. thesis from Indian Poultry Science Association in the year 2019. He has also received best poster and oral presentation awards in different conferences.

He has acted as additional charges as Officer Incharge of Bull Mother Experimental Farm Livestock unit (3 years), Fodder unit (1 year), Poultry farm (3 years), Establishment section (3 years), Technical Officer to Dean (3 years), Vehicle Section (3 years), Garden section (3 years), PRO (3 years) and Guest House (1 year).

He has published Books-4, Practical manuals-13, Research articles-72, Abstracts-46, Popular articles-18, Technical bulletins-7, Leaflets/Pamphlets/Folders-34, etc. He has also worked as PI in NIF, DST, Co-PI one in BARC, three ICAR (AICRP in cattle, TSP Kadaknath and TSP Baster) and one NIF funded project. He has also worked as organizer; convenor and co-organizer in 43 trainings programmes including Skill India programme. He has also worked as a Nodal Officer NISAGENT, Convenor in Animal Science Information Centre of CGKV, Durg and Nodal Officer for Skill India programme of Government of India. He has also acted as Co-organizing and Finance Secretary in XXXVI IPSACON-2019.



Dr. Shailendra Kumar Tiwari, Dean, College of Veterinary Science & A.H., Anjora, Durg and the former Director Instructions, Chhattisgarh Kamdhenu Vishwavidyalaya, Durg (CG) and Professor and Head, Department of Veterinary Surgery and Radiology was born on 1st June, 1962 at Maihar, District Satna (M.P.).

Dr. Tiwari obtained his B.V.Sc. & A.H. and M.V.Sc. and A.H. degree from Jawaharlal Nehru Krishi Vishwavidyalaya, Jabalpur (M.P.) in 1983 and 1988 respectively with the Gold Medalist in both the degree. Dr. Tiwari obtained his Ph.D. degree in 1996 from G.B. Pant University of Agriculture and Technology, Pantnagar, Uttarakhand under the guidance of renowned Surgeon Prof. (Dr.) Amresh Kumar and received "Jawaharlal Nehru Award" of ICAR for Best Ph.D. thesis in 1998. Dr. Tiwari started his service career as Veterinary Officer in 1985 and became Professor and Head in 2003, where he was continuing before selection on the Post of Director Instructions in 2014. Dr. Tiwari joined the post of Dean on 12 March, 2020.

During the academic Dr. Tiwari is recipient of many awards viz. University Gold Medal for B.V.Sc. & A.H. and M.V.Sc. & A.H. degree. R.K. Gambheer Gold Medal, Behre Gold Medal, Patwardhan Gold Medal, Jawaharlal Nehru Award, ICAR Junior fellowship, ICAR Senior fellowship, Common wealth fellowship, etc.

Dr. Tiwari has 32 years experience of teaching, research and extension work in the field of Veterinary Science. He has guided 29 M.V.Sc. and 1 Ph.D. student. Dr. Tiwari has done pioneer work on "Reversal of anaesthesia in large animals after surgery to avoid prolong recumbency". For this work he was awarded "Jawaharlal Nehru Award" by ICAR, New Delhi. Dr. Tiwari is recipient of several other awards viz. Best Teacher Award, Bharat Jyoti Award, A.K. Bhargava Memorial Award, Pashudhan Silver Jubilee Award, Krishi Shiromani Award, Fellow of NAVS, Fellow of ISVS, etc.

Dr. Tiwari was the Principal Investigator of an ICAR sponsored adhoc project on Urolithiasis in animals with a total outlay of 27.85 lakhs. Dr. Tiwari has high scientific temperament and published 269 research papers in reputed journals of India and abroad.

Dr. Tiwari is a member of Academic Council, Administrative Council and Executive Council of CGKV, Durg from the last 4 years. He was also member of Governing Council of NAVS for 3 years. Dr. Tiwari has published a book entitled "Text book of Aneasthesia and Anaglesia" published by New Delhi publisher, New Delhi in 2018.

Preface

This book entitled "New Horizons in Poultry Farming" has been written for UG, PG and Ph.D. students of Veterinary science doing their specialization in Poultry Science. Poultry industry is the fastest growing sector in Indian Agriculture. Recent advances in poultry farming have created new horizons in poultry meat and egg production. Knowledge related to technological advances will improve poultry production. In this context, updating new scientific intervention related to poultry production will increase job opportunity for PG and Ph.D. students along with refresh the existing knowledge of the faculty members and field veterinarians. This book consists of current issues of poultry production pertaining to poultry housing and management, poultry nutrition and feed technology, poultry genetics and breeding, post harvest technology along with poultry reproduction and physiology. Editors are greatly thankful to the almighty and their parents for their inspiration. Editor are thankful to their teachers. Editors are highly thankful to the persons mentioned in the references along with some authors, if forgotten to be acknowledged. Information given in the book is based on knowledge and understanding of the subject of various experts. However, editors are not responsible for any topographical error or other mistakes. Please consult the reference books for further information. Editors are greatly acknowledged to the authors of relevant chapters contributed in this book. Thanks to all who directly and indirectly contributed to this book. Writers of concern chapters are solely responsible for originally of their contents.

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Chapter 1

Recent Feedstuffs for Economic Poultry Production

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Introduction

Poultry feed accounts 65-75% of total recurring expenditure. Unconventional / Alternative / Non-traditional feedstuffs are those which are not normally being used in feeding or commercial diet preparation. These are agricultural/ and industrial products/their by-products not commonly used for their diet and are available at competitive lower price in market. They may be classified as energy and protein rich alternate feedstuffs. Cereal grains, grain by products and agro industrial by-products are used as energy sources. Energy sources are used at 50-70% in the diet and also contribute to 5% - 30% of the total protein content of the diet. The protein quality of the cereals and agro-industrial by-products is poor due to low content of limiting amino acids like lysine and methionine beside low calcium and high phosphorus contents. Although 60% of phosphorus is present in the form of bound phytate salt and which is not available to poultry.

However, the effective combinations (cereal mixture, protein mixture and protein-cereal mixture) are required to be identified through biological trials. The alternate vegetable feed resources are generally deficient in one or more amino acids. However, the critical amino acids (lysine, methionine and threonine) are available commercially for supplementation to ensure improved utilization of protein and feed. Again, the cost of lysine generally fluctuates based on soybean meal prices, being rich in lysine. Some of the ingredients (sesame meal, maize gluten meal and rapeseed meal) are relatively rich in methionine, thus judicious use of these ingredients along with