



RECENT TRENDS IN POULTRY PRODUCTION

This book provides a platform for the exchange of new ideas and novel information on the recent development in poultry sector. This book aims at giving emphasis to all recent, novel and innovative research on poultry nutrition, poultry breeding, avian disease, post-harvest technology and sustainable poultry production in view of poultry welfare in the country. The major theme of the book is "**Conceptual understanding and future strategies for welfare friendly Poultry Production in India**". This book content lead papers and expert opinion on various latest aspect of Poultry Science. Emphasis has been given to include the areas of Poultry Genetics, Breeding and Biotechnology; Poultry Nutrition, Physiology and Livelihood; Poultry Disease and Health; Poultry Housing, Management and Post-harvest Technology; Rural Poultry Extension, Economics and Marketing and Climate Change, Environmental Hygiene, Welfare and Waste Utilization, etc. This book is equally beneficial for researchers, scientists as well as students preparing for various competitive examination of ICAR, New Delhi related to various aspects of poultry science.

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Satish Serial Publishing House, Delhi-110 033



Rs. : 3950.00

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S. P. TIWARI
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In association with :

Indian Poultry Science Association

Central Avian Research Institute

Izatnagar-243 122 (Uttar Pradesh)

© Publisher

ISBN 978-93-88892-49-0

e-ISBN 978-93-88892-50-6

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Composed, Designed & Printed in India

Foreword

Poultry is one of the fastest growing segment of the agriculture sector in India and many other countries. The scientific breakthrough resulted in development of poultry production, even under adverse climatic conditions, which transformed the poultry from rural farming to full fledged industry in India. India's contribution to world's egg and chicken production is nearly 4 and 2%, respectively, whereas poultry sector contributes 1% to national GDP and 10% of total livestock GDP. The present poultry production is supported by 600 hatcheries, 60,000 poultry farmers holding intensive poultry production and about one lac farmer families keeping a flock of 5-250 birds. The present per capita availability is far below the ICMR recommended level of 180 eggs and 11 kg meat. Private sector partnership in poultry production through contract farming systems and the vertical integration has played a major role in this spectacular growth, especially in southern and western states of India. Sustainable poultry production achieved through the import of pure lines/grandparent stocks, least cost feed formulation, introduction of vaccines against major diseases, availability of support services, improved quality breeder management, contract system of feeding and developments in poultry processing plants and further processing.

This book "Recent Trends in Poultry Production" has been articulated in the event of XXXVI Annual Conference of Indian Poultry Science Association on "Conceptual understanding and future strategies for welfare friendly poultry production in India" December 11-13, 2019 organized by College of Veterinary Science and Animal Husbandry, CGKV, Anjora, Durg and Indian Poultry Science Association, Izatnagar, U.P. I congratulate editors of the book Dr. S.P. Tiwari, Dean Faculty and Organizing Secretary and Dr. O.P. Dinani, Co-organizing Secretary of this event to publish this book containing lead papers and expert views from various aspects of Poultry Science in the country.

I am sure the efforts of the learned speakers of lead papers will enrich and sensitize the budding professionals and also update the technical knowledge of field veterinarians, faculty, PG and Ph.D. students in the field of poultry production.

I congratulate the entire team and wish the XXXVI Annual Conference of Indian Poultry Science Association a grand success.

Prof. (Dr.) N.P. Dakshinkar
Hon'ble Vice Chancellor
CGKV, Durg

Preface

This book "Recent Trends in Poultry Production" has been prepared in the event of XXXVI Annual Conference of Indian Poultry Science Association on "Conceptual understanding and future strategies for welfare friendly poultry production in India" December 11-13, 2019 organized by College of Veterinary Science and Animal Husbandry (CGKV) Durg & Indian Poultry Science Association, Izatnagar, U.P. This book content lead papers and expert opinion on various latest aspect of Poultry Science. Emphasis has been given to include the areas of Poultry Genetics, Breeding and Biotechnology; Poultry Nutrition, Physiology and Livelihood; Poultry Disease and Health; Poultry Housing, Management and Post-harvest Technology; Rural Poultry Extension, Economics and Marketing and Climate Change, Environmental Hygiene, Welfare and Waste Utilization, etc.

Editors are greatly thankful to the almighty and their parents for their inspiration. Editors are thankful to their teachers. Editors are highly thankful to the persons mentioned in the references along with 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 and research papers for further information. Editors are greatly acknowledged to 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.

We are highly thankful to Dr N.P.Dakshinkar, Hon'ble Vice Chancellor, Chhattisgarh Kamdhenu Vishwavidyalaya, Durg for their guidance, encouragement and moral support for preparation of this book.

Dr. S.P. Tiwari
Dr. O.P. Dinani

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Chapter 1

Duck Production: An Overview

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Introduction

Ducks are important poultry species in many developing countries by virtue of their hardiness to diseases, long production year, large sized eggs, early morning egg laying character and their habit of foraging on aquatic plants and snails. They are suitable for integrated farming systems. They flourish well in marshy and wet lands. Along with other scavenging poultry species, ducks play a vital role in meeting daily protein needs and producing household income of farm families in the mixed farming systems of many developing countries. It is considered to be the women's enterprise in small holder farming systems. Although a number of potential advantages, duck farming is decreasing year after year in India which could be due to scarce scavenging areas and natural feed resources, drying up of natural water bodies, excessive use of chemicals in crop fields, less Govt. support, etc. Nomadic duck production is still on a traditional system, location specific technological interventions are to be carried out to refine the existing practices (Rahman *et al.*, 2017). Ducks and other water fowls are of great importance for food security of mankind in many parts of the world as elaborated by Pingel (2009).

Breeds of ducks

Asia keeps tremendous variety of duck breeds, such as Shaoxing, Jingdin, Shanma, Liancheng, Bai and Gaoyou duck in China (Ma and Zhao, 1998), Tsaiya in Taiwan, Alabio and Tegal ducks in Indonesia, Itik Jawa in Malaysia, Chara and Chemballi varieties of Kuttanad