Like many long-life food products, shelf-life determination and open date mar-king of Mathur Peda is an essential requirement for ensuring quality products to the consumers. It is, however, not an easy exercise in India where ambient temperature extremes vary from sub-zero to above 45°C over a year. Furthermore, the storage temperature conditions are not uniform at any time in different places. The product from one batch may thus have different shelf-life at two different marketing locations. Different kinetic approaches to food quality modeling and various changes responsible for deterioration of Mathur peda quality have been reviewed. The literature indicated that mathematical models based on kinetic parameters closely predicted the deterioration in quality of long-life foods. Use of kinetic data in studies involving time-temperature integrators and computer simulation also successfully monitored changes in food quality. The literature further revealed that deteriorative changes in Mathur Peda were mostly storage temperature dependent and hence kinetic principles may be useful in predicting shelf-life of Mathur Peda.

Manjunath B.M
Supraja Nookala

Deterioration kinetics of mathura peda

under different sets of environmental conditions

Dr.B.M Manjunatha is the Asst.Professor and Head of Dairy Engineering, College of Dairy Technology, Sri Venkateswara Veterinary University, Tirupati. He had his graduation in B.Tech (Dairy Technology) from UAS, Bengaluru and master's and Ph.D degrees in Dairy Engineering from National Dairy Research Institute.

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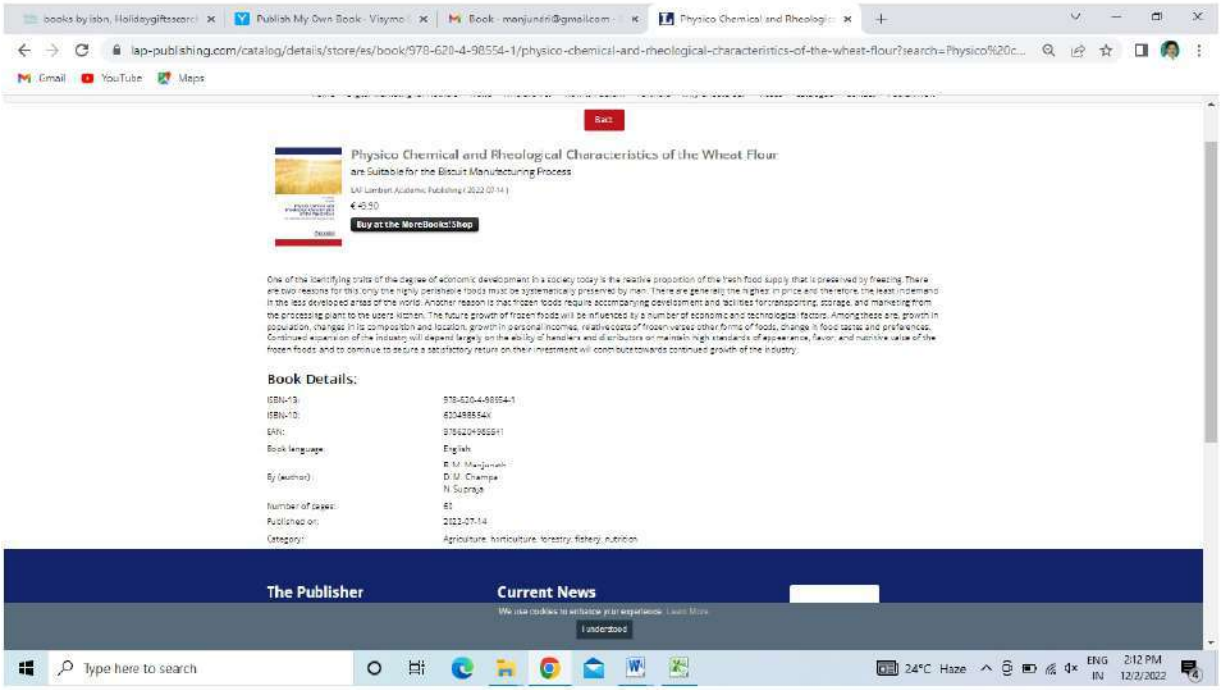

The Authors

Dr. S. Ravi Kumar, had obtained his B.Sc. (Dairy Technology) in 1976, M.Sc. (Dairy Engg.) in 1981 and Ph.D in 1999 from NDRI, Karnal. He had joined APDDCF Ltd, in 1976. He continued to work as Dairy Manager, Marketing Manager at various places in Andhra Pradesh. He joined in 1988 as Associate Professor (Dairy Engg.) in the then APAU, (later changed to ANGRAU and SVVU), and was promoted as Professor of Dairy Engg., in 2001, after acquiring his Ph.D from NDRI. He was head of Dairy Technology Programme and later College of Dairy Technology from 2005 to 2012. During his career he held the posts as Assoc. Dean, Dean (Faculty of Dairy Science), Estate Officer and Member, Board of Management in the SV Veterinary University.

He was project in-charge for various projects on use of non-conventional energy use in dairy equipment and cold storages (for dairy and fisheries). Conducted training programmes for technical officers and technicians in various dairies for plant operations. He retired as Professor, in the year 2017.

He continues to teach various dairy engineering subjects as Guest faculty, and also incharge of IGNOU, study center at Heritage Foods Ltd.

Dr. B.M Manjunatha, Asst. Professor and Head, Dept of Dairy Engineering, College of Dairy Technology, Sri Venkateswara Veterinary University, Tirupati. He had his graduation in B.Tech (Dairy Technology) from UAS, Bengaluru and master's and Ph.D degrees in Dairy Engineering from National Dairy Research Institute, Karnal.

He has gained a rich experience in execution of around 14 Dairy and Food industry projects in India and overseas. He was involved in execution of Dairy and Food industrial projects which includes milk processing, milk products, milk powders, coffee powders and Egg powders, *etc.*

His Doctoral research was on innovative subject of Nano technology application in surface engineering of Dairy Equipment. He has got academic excellence award for his Ph.D from National Dairy Research Institute. His path breaking research adventure has cleared way for many other researchers to follow.

He was co-principle investigator of departmental research projects on Vapor absorption refrigeration and solar energy-based bulk cooler. He is life member of Indian Dairy Association and Indian Dairy Engineers Association.

Textbook of DAIRY ENGINEERING

— Authors —

Dr. S. Ravi Kumar

Professor of Dairy Engineering (Retd.)
Former Dean, Faculty of Dairy Science
Sri Venkateswara Veterinary University, Tirupati
Former Dairy Manager, APDDCF Ltd

Dr. B.M. Manjunatha

Head, Department of Dairy Engineering
College of Dairy Technology
SVVU, Tirupati
Former Senior Process Engineer, GEA ltd.

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Dr. V. Ramani Chowdhary.

Microbial Zoonoses

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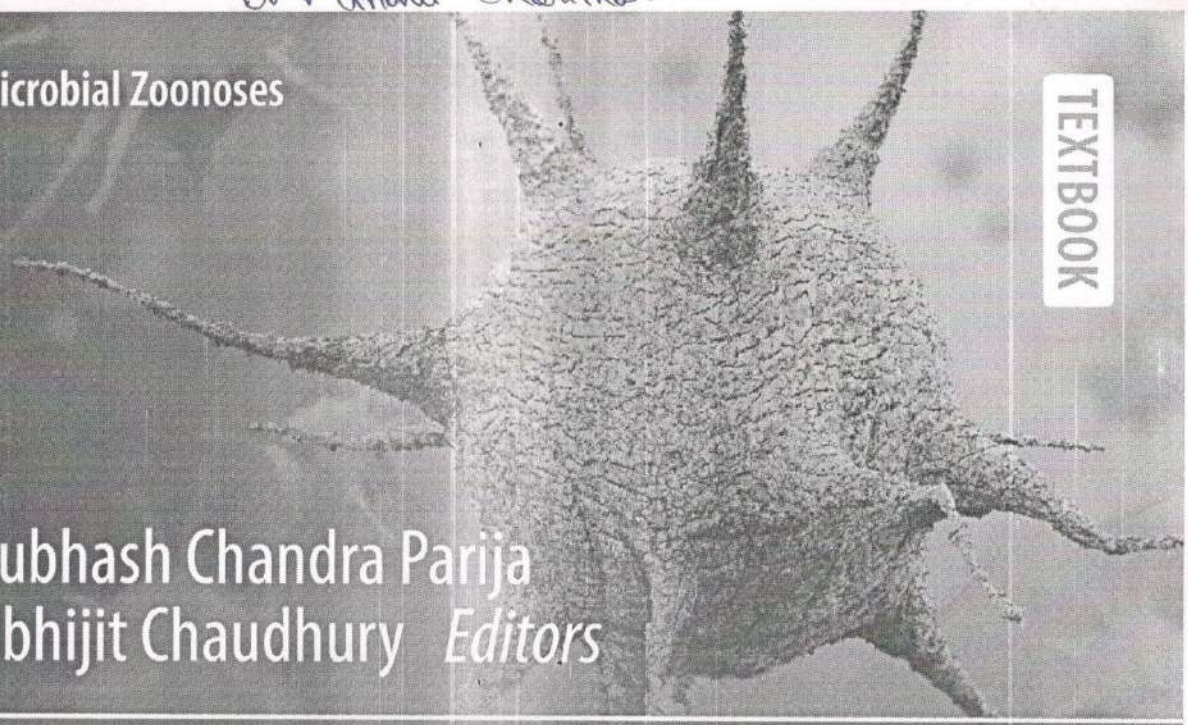

Subhash Chandra Parija
Abhijit Chaudhury *Editors*

Textbook of Parasitic Zoonoses

Springer

American Trypanosomosis

V. C. Rayulu and V. Gnani Charitha

Learning Objectives

1. To have knowledge about alternate modes of disease transmission apart from the classical vector transmission through inoculation.
2. To know various forms of clinical manifestations depending on the routes of infection.
3. To have an understanding of the importance of microscopic examination in diagnosis and strain identification by molecular techniques.

Introduction

The protozoan parasite *Trypanosoma cruzi*, responsible for causing American trypanosomosis, was discovered by the Brazilian scientist Carlos Chagas in the year 1909. The disease is endemic to large parts of Latin American countries, with the exception of the Caribbean islands. However, in recent decades, it has progressively been diagnosed worldwide highlighting its growing significance in the USA, Europe, Canada, Eastern Mediterranean and Western Pacific countries. Out of all, people mostly from Latin America are more prone to be infected with *T. cruzi*, and it is considered one of the neglected diseases. Chagas disease is mainly communicated to human beings through contact with faeces/urine of infected blood-sucking bugs, viz. kissing bugs or conenose bugs (belonging to subfamily Triatominae). Among these *Triatoma infestans*, *Triatoma dimidiate*, *Rhodnius prolixus* and *Panstrongylus megistus* are considered as being the most important vectors.

History

Approximately, 7–10 million years ago, *T. cruzi* ancestors were probably introduced to South America via bats. Several travellers and physicians documented records of patients with disease symptoms similar to American trypanosomosis during the sixteenth century. Nevertheless, the critical role of triatomine bugs as vectors in transmitting Chagas disease remained unexplored until 1909. Identification of *T. cruzi* and triatome bugs as the transmission vector of Chagas disease came into limelight only at the beginning of the twentieth century. The disease was first described by Carlos Ribeiro Justiniano Chagas in a 2-year-old baby named

V. C. Rayulu (✉)
Department of Veterinary Parasitology, Sri Venkateswara Veterinary University, Tirupati, Andhra Pradesh, India

V. G. Charitha
Sri Venkateswara Veterinary University, Tirupati, India

S. C. Parija, A. Chaudhury (eds.), *Textbook of Parasitic Zoonoses*, Microbial Zoonoses,
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ADVANCES IN PARASITOLOGY

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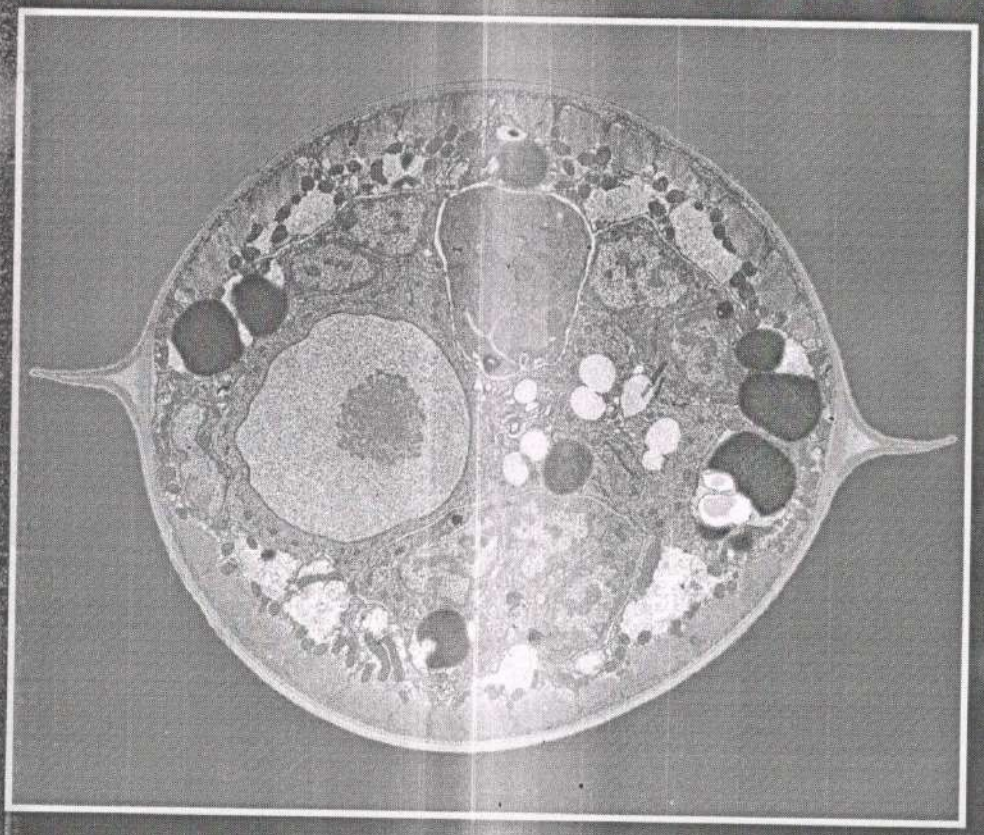
DWIGHT D. BOWMAN



TOXOCARA AND TOXOCARIASIS

VOLUME
109

CHAPTER THIRTY-SEVEN

Canine Toxocariosis: Its prevalence, incidence and occurrence in the Indian subcontinent

Manigandan Lejeune[a,*], V. Gnani Charitha[b], C. Mathivathani[c], V.C. Rayulu[b], Dwight D. Bowman[d]

[a]Department of Population Medicine and Diagnostic Sciences, Animal Health Diagnostic Center, College of Veterinary Medicine, Cornell University, Ithaca, NY, United States
[b]Department of Veterinary Parasitology, College of Veterinary Science, Sri Venkateswara Veterinary University, Tirupati, Andhra Pradesh, India
[c]Department of Veterinary Parasitology, Rajiv Gandhi Institute of Veterinary education and Research, Pondicherry University, Puducherry, India
[d]Department of Microbiology and Immunology, College of Veterinary Medicine, Cornell University, Ithaca, NY, United States
*Corresponding author: e-mail address: ml872@cornell.edu

Contents

Abstract

Toxocariosis is an important neglected tropical helminth disease of zoonotic significance for which canids are the definitive hosts. Dogs are also considered the sentinel host for the occurrence of *T. canis* infections in humans. Therefore, understanding its prevalence in canine population is imperative for any effective disease control in humans. A comprehensive review of literature on the prevalence of *T. canis* in canids was lacking from the Indian subcontinent which necessitated our efforts to compile

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Dr. J. Dhanalakshmi
Book Chapters

Springer Protocols

Naveen Kumar · Vineet Kumar
Sameer Shrivastava · Anil Kumar Gangwar
Sonal Saxena *Editors*

Tissue Scaffolds

Chapter 19

Tissue Scaffolds Derived from Buffalo Aorta and Clinical Applications

Jetty Devarathanam, Ashok Kumar Sharma, Naveen Kumar, Vineet Kumar, Shruti Vora, D. T. Kaarthick, Anil Kumar Gangwar, Rukmani Dewangan, Foram A. Asodiya, Himani Singh, Sameer Shrivastava, Sonal Saxena, and Swapan Kumar Maiti

Abstract

In this study, protocols were optimized for the preparation of acellular scaffold from buffalo aorta. The protocols comprise the use of 1% Triton X-100 and 1% sodium dodecyl sulfate detergents along with trypsin. The study revealed that the protocol in which the aorta was treated with 1% sodium dodecyl sulfate detergent for 24 h followed by treatment with 0.25% trypsin enzyme solution for 2 h and then again with same 1% sodium dodecyl sulfate for the next 24 h showed complete acellularity with normal thickness and arrangement of collagen fibers. The acellular matrices were evaluated based on histopathological observations; scanning electron microscopic observations; DNA extraction, quantification, and purity; and Fourier transform infrared (FTIR) spectroscopy. The developed acellular aortic matrices were tested for the repair of abdominal wall defects in guinea pigs; clinical cases of hernia in buffalo, cattle, buck, and calves; and repair of the trachea in cow.

Key words Buffalo, Aorta, Triton X-100, Sodium dodecyl sulfate, Trypsin, Clinical application

1 Introduction

Reconstructive surgery is an innovative field of science concerned with the utilization of various synthetic and biological materials as implants and prostheses. Abdominal wall reconstruction is one of the challenging tasks in reconstructive surgery due to the limitations of available mesh materials. Even though much research has been carried out in this field, to date there is no such material that can be used in abdominal wall reconstruction with promising success. The principal concept in the management of abdominal wall defects is "tension-free" closure. Previously several synthetic materials like polypropylene, polyknitted mesh were used to achieve this objective. However, due to their suboptimal performance in clinical

Questions & Answers in CLIMATOLOGY

Dr. E. Muralinath
Dr. M. Guruprasad
Dr. Prasanth Babu
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Contact No. : 9595359435
Website: http://www.lbp.world
Email ID: apiguide2014@gmail.com

(7)

PERCEPTION OF AGRICULTURAL LIBRARY PROFESSIONALS ON CONSTRAINTS IN DIGITAL PRESERVATION

Dr. Kutty Kumar[1] and **Dr. T. Sreenivasa Rao**[2]

[1]Assistant Professor, Library and Information Science,
College of Veterinary Science, Sri Venkateswara Veterinary University,
Proddatur-516 360, Andra Pradesh
[2]Assistant Professor (LIS), University Library
Acharya NG Ranga Agricultural University, Guntur-522 034, Andra Pradesh

ABSTRACT

The complexity and expense of preserving digital information could be a barrier to the growth of digital libraries. Digital preservation is pondering, and it comes with all of the hazards that come with using approaches that haven't been thoroughly evaluated. The needs and limits of repositories dictate digital preservation techniques, with little regard for the interests of current and future users of digital scholarly resources. The purpose of this study is to get the opinions of library professionals from the Indian Council of Agricultural Research (ICAR) and State Agricultural Universities (SAU) about their digital preservation constraints in their respective libraries.

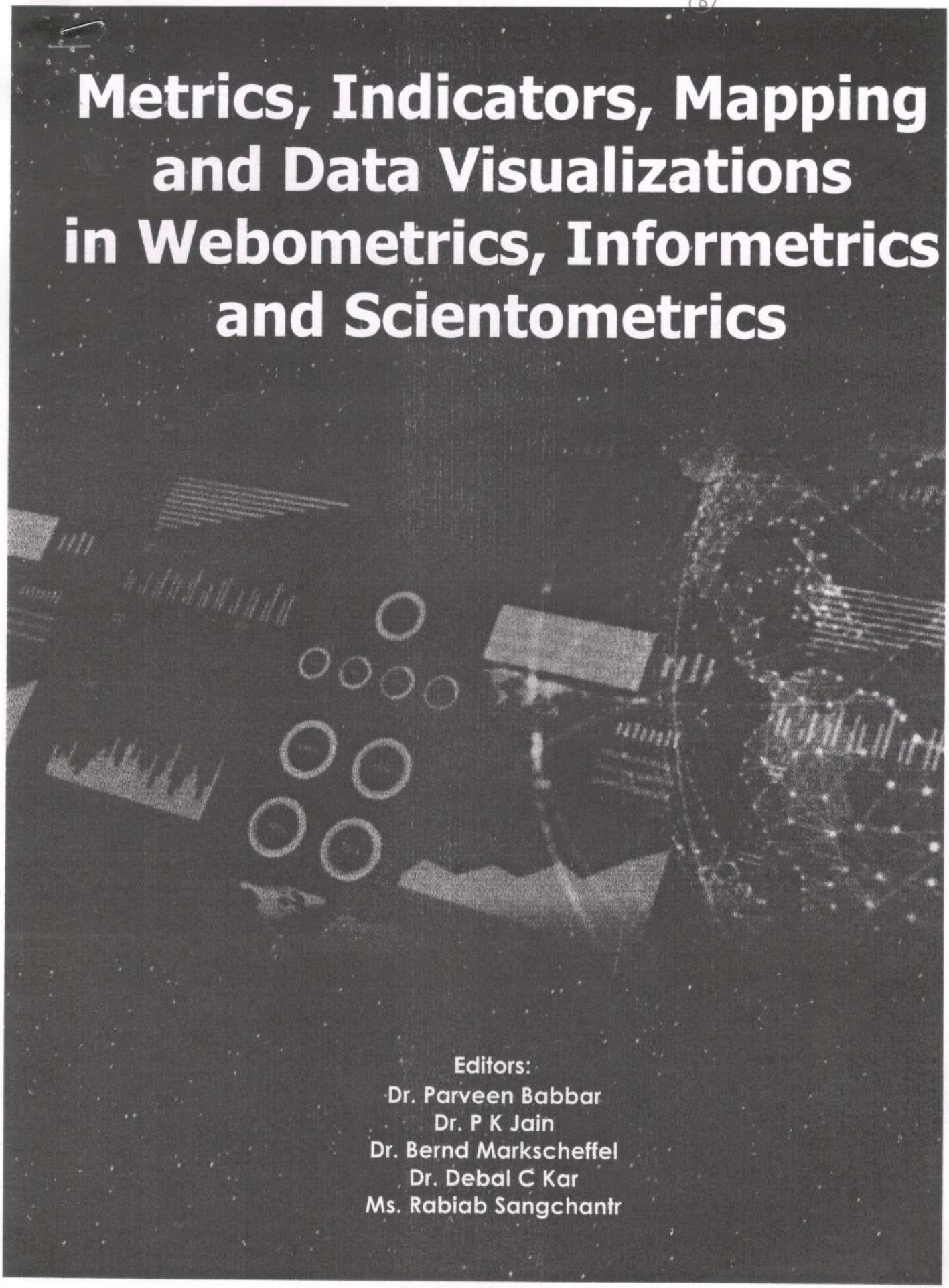
Keywords: *Digital Preservation, Constraints, Digital Policy, Meta Data, Agricultural Library, ICAR, State Agricultural Universities*

1. Introduction

Indian Council of Agricultural Research is an extensive network for agricultural education, research and extension in agriculture and allied subjects. In this network under the ICAR umbrella more than two hundred libraries are working, i.e., 4 Deemed University Library as National library, 3 Central University Library, 64 State Agricultural, Horticulture and Veterinary University Library, 65 central Institute Library,13 Project Directorate Library, 14 National Research Centre Library and 6 Bureau Library are smoothly working in different places of India Indian Council of Agricultural Research is an extensive network for agricultural education, research and extension in agriculture and allied subjects. In this network under the ICAR umbrella more than two hundred libraries are working, i.e., 4 Deemed University Library as National library, 3 Central University Library, 64 State Agricultural, Horticulture and Veterinary University Library, 65 central Institute Library, 13 Project Directorate Library, 14 National Research Centre Library and 6 Bureau Library are smoothly working in different places of India The Indian Council of Agricultural Research (ICAR) is an autonomous apex body responsible for co-coordinating agricultural education, research, and extension in India. Indian Council of Agricultural Research is also providing support for agricultural education and research and extension activities. Under agricultural education for strengthening and development of agricultural libraries.

The Indian Council of Agricultural Research (ICAR) is a self-governing top organization in India that coordinates agricultural education, experimentation, and outreach. ICAR also contributes to agricultural education, research, and extension initiatives. More than 200 libraries are operational under ICAR, including 4 Deemed Universities Library as National Library, 3 Central University Library, 64 State Agricultural, Horticulture, and Veterinary University Libraries, 65 Central Institute Libraries, 13 Project Directorate Libraries, 14 National Research Centre Libraries, and 6 Bureau Libraries, all of which are located throughout India. Libraries have gathered digital resources that offer quick, easy, and instant searches of enormous amounts of information due to agricultural technology's rapid growth and development. A massive amount of data is published in electronic form. Access and searching areeffortless in the case of digital preservation(Darhmingliana H, 2019).The application of digital resources is provided in figure 1.

Metrics, Indicators, Mapping and Data Visualizations in Webometrics, Informetrics and Scientometrics



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43

Websites of State Veterinary Universities in India: A Webometric study

Kutty Kumar
Assistant Professor, Library and Information Science
College of Veterinary Science, Sri Venkateswara Veterinary University
Proddatur-516 360
Email: kumarkkutty@gmail.com

Dr P K Jain
Librarian, Institute of Economic Growth
University of Delhi Enclave
Delhi- 110007. India
Email: pkjain1310@gmail.com

Abstract

This paper analyses the Webometrics of Indian state veterinary university websites. Due to the ease with which websites can convey information to visitors, academic institutions can't do without them. Web-based indicators and web performance can evaluate a university's teaching and research. Therefore, assessing educational websites is vital. Metrics research has opened the door to webometrics, which we can use to gauge the effectiveness of academic websites. The websites of state veterinary colleges were analyzed using webometric methods, which involve analyzing the link structures of websites. Google (https://www.google.com/) was used to search for relevant data for this study. Google conducts its search using a dictionary of web address formats. Data is gathered by conducting four separate Google searches using the following parameters: domain, link domain, link domain AND, link domain AND NOT, and link domain NOT. We used four Boolean search statements to gather information from veterinary university websites. The 17 state universities in India that offered veterinary programs were the focus of this study, not the country's central universities or ICAR institutions. Fifteen of the 17 veterinary colleges (87.24%) were established after 2000. Internal, external, backlinks, and website size were all measured. According to the data, external and internal links are significantly more common than backlinks. The authors recommend that veterinary groups use online sources, services, and regular news and research updates to stay current.

Keywords: Veterinary, Webometrics, State Universities, Link, External Link.

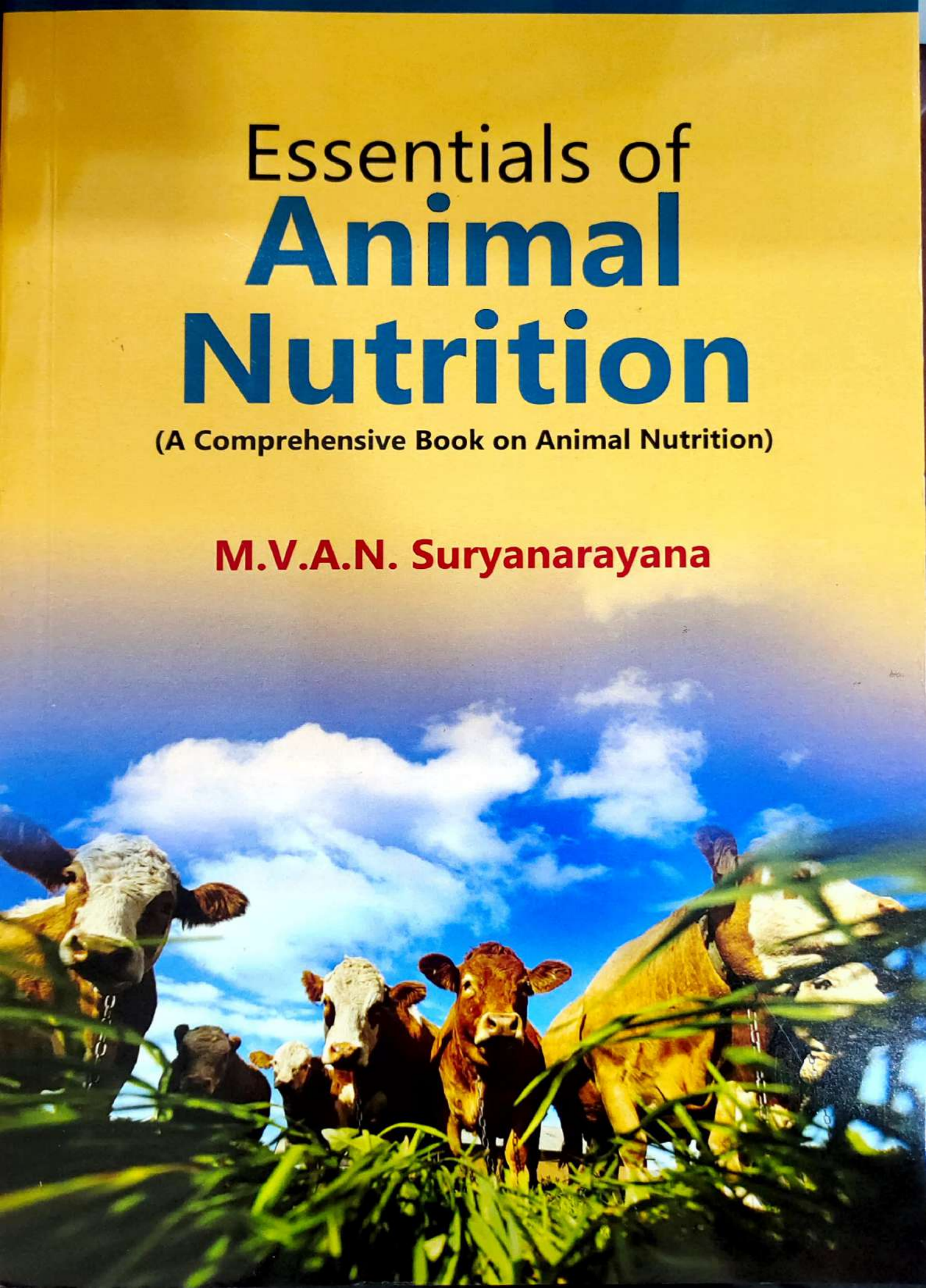
0. Introduction

Prospective students and parents often visit a university's website first. They constantly research the university online. The University website makes the first impression, and the first impression is the most lasting. A website is a portal to an organization's information, products, and services, (Caglar, 2022). It should reflect client needs. The website can be accessed anytime, day or night, even on holidays. A university website can encourage student-family dialogue as a digital guidance counselor. They can chat about fees, subscribe to a newsletter, or email. In this way, a website can generate leads. Well-designed websites encourage visitors to learn more about the institution. Website visitors can expect detailed answers to their questions. Persuading students and families to visit the college increases attendance. It shows that a university's website is essential. Manzoor et. al. (2012) stressed the importance of universities having user-friendly websites with information about programs, courses, locations, and

Essentials of Animal Nutrition

(A Comprehensive Book on Animal Nutrition)

M.V.A.N. Suryanarayana



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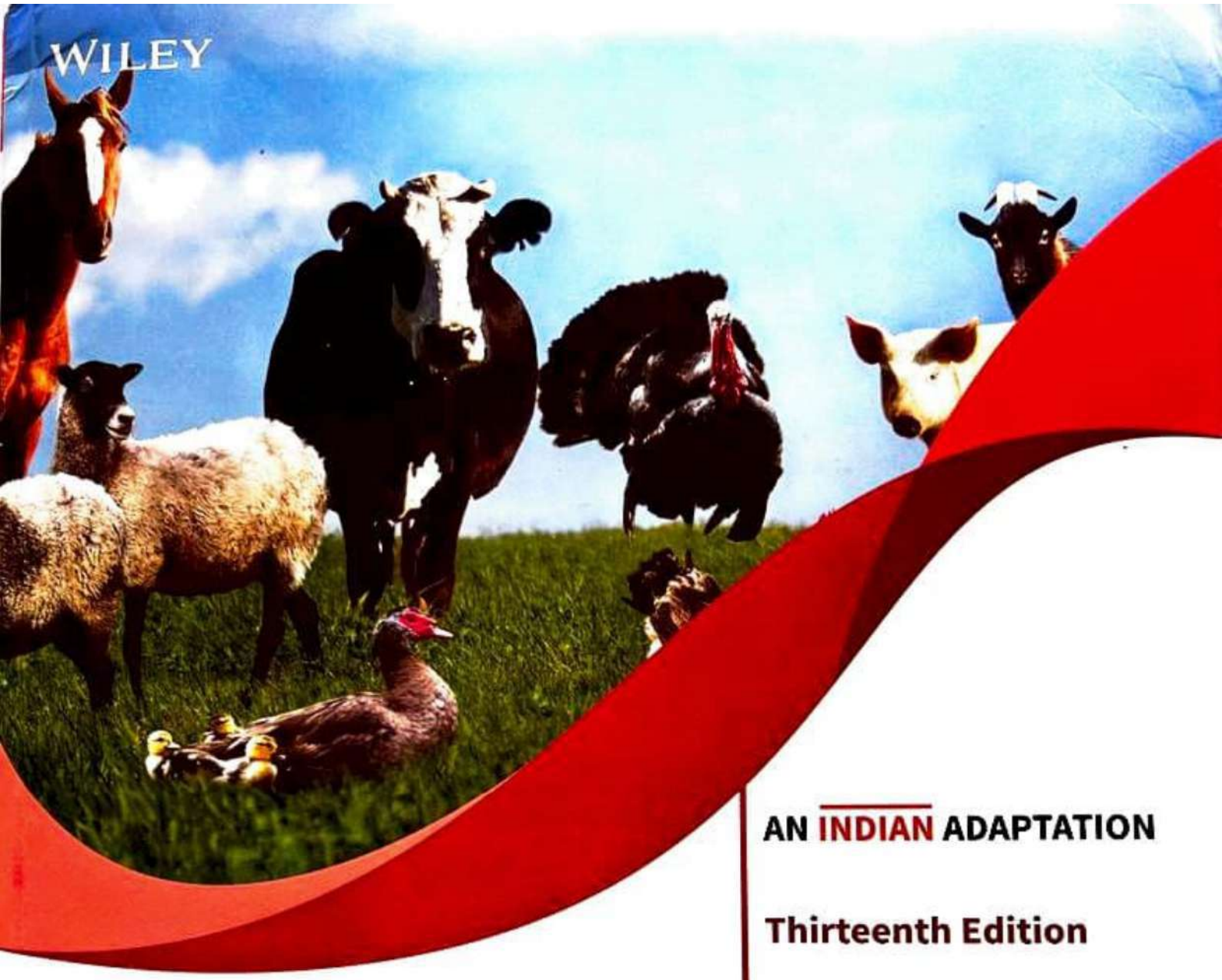

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SECTION I

Cell Physiology and Homeostasis

Section Editors: Raji Kanakkaparambil and L.S.S. Vara Prasad Reddy

Contents

List of Contributors to the Adapted Edition

K. Rajamanickam
Assistant Professor
Department of Veterinary Physiology and Biochemistry
Veterinary College and Research Institute
Tamil Nadu Veterinary and Animal Sciences University
Salem, Tamil Nadu
India
(Adapter of Chapters 8, 11, 12, 13, 14, 21, 22, 50)

K. Siva Sagar Reddy
Assistant Professor
Department of Veterinary Physiology
College of Veterinary Science
Sri Venkateswara Veterinary University
Tirupati, Andhra Pradesh
India
(Adapter of Chapters 46, 47, 49, 53, 54)

Leela V.
Professor and Head
Department of Veterinary Physiology
Madras Veterinary College
Tamil Nadu Veterinary and Animal Sciences University
Chennai, Tamil Nadu
India
(Adapter of Chapters 16, 26, 28, 30, 34, 35, 40, 42, 51, 55)

L.S.S. Vara Prasad Reddy
Associate Professor
Department of Veterinary Physiology
College of Veterinary Science
Sri Venkateswara Veterinary University
Tirupati, Andhra Pradesh
India
(Adapter of Chapters 15, 17, 18, 19, 20, 38, 39, 43, 45, 48; Editor of Section I)

P. Visha
Associate Professor and Head
Department of Veterinary Physiology and Biochemistry
Veterinary College and Research Institute
Tamil Nadu Veterinary and Animal Sciences University
Salem, Tamil Nadu
India
(Adapter of Chapters 4, 5, 10, 23, 24, 27, 29, 31, 32, 33)

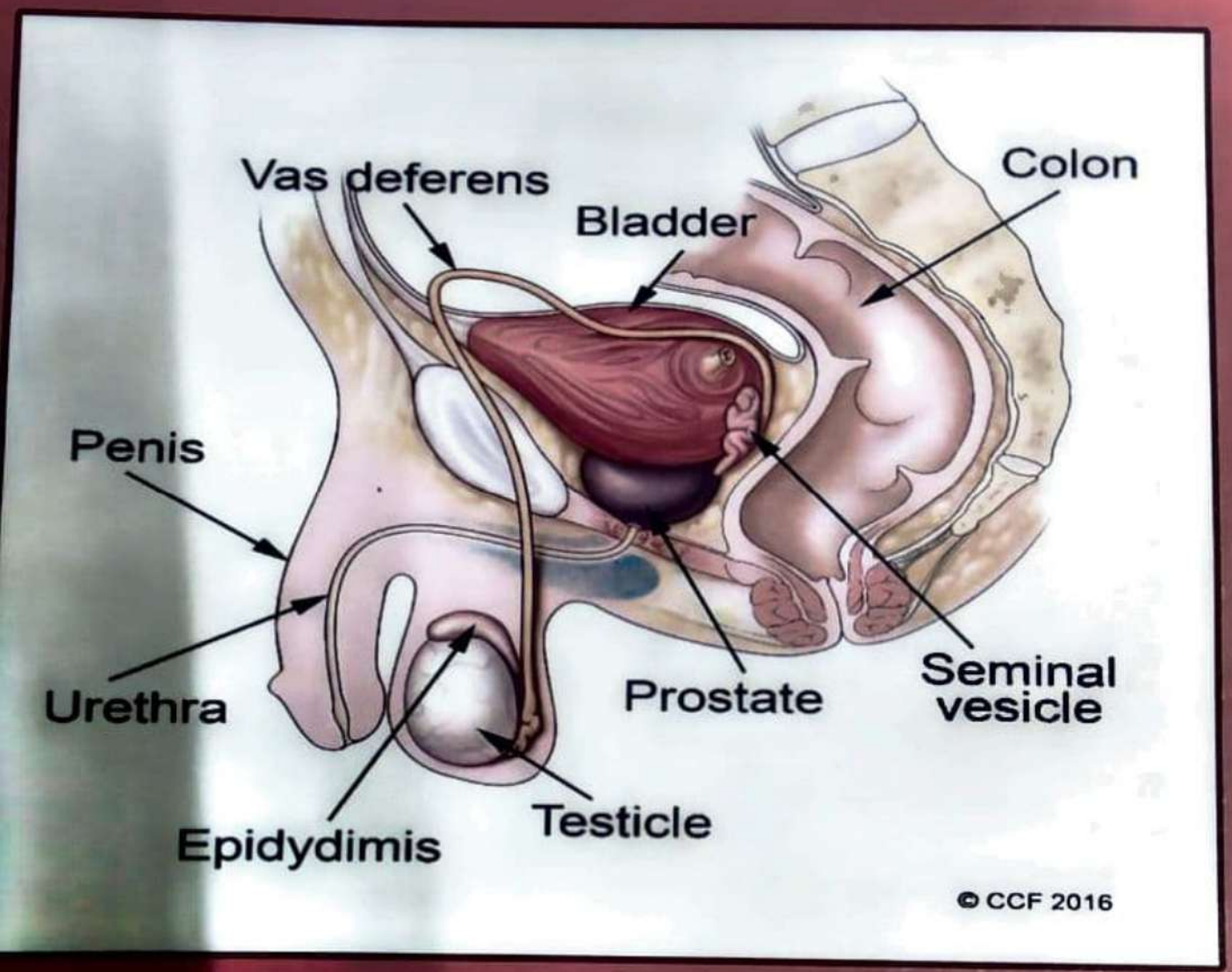
Pramod Kumar
Assistant Professor and Head
Department of Veterinary Physiology
Bihar Animal Sciences University
Patna, Bihar
India
(Adapter of Chapters 25, 36, 37, 41, 52, 56, 57, 58, 59)

Raji Kanakkaparambil
Associate Professor and Head
Department of Veterinary Physiology
College of Veterinary and Animal Sciences
Kerala Veterinary and Animal Sciences University
Wayanad, Kerala
India
(Adapter of Chapters 1, 2, 3, 6, 7, 9; Editor of Section I)

Sreekumar T. R.
Assistant Professor
Department of Veterinary Physiology
College of Veterinary and Animal Sciences
Kerala Veterinary and Animal Sciences University
Thrissur, Kerala
India
(Adapter of Chapter 44)

V. Ramnath
Professor and Head
Department of Veterinary Physiology
College of Veterinary and Animal Sciences
Kerala Veterinary and Animal Sciences University
Thrissur, Kerala
India
(Adapter of Chapter 44)

Questions & Answers in Male Reproductive Physiology



Dr. E. Muralinath
Dr. A. Prasanth Babu
Dr. K. Sravani Pragna
Dr. P. Manjari
Dr. Kalyan C. Chapalamadugu
Dr. M. Guru Prasad
Dr. L. S. S. Vara Prasas Reddy

Farm Animal Preventive Medicine

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N. Syaamasundar

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AWARENESS AND USAGE OF ELECTRONIC BOOKS BY THE LIBRARY USERS OF COLLEGE OF VETERINARY SCIENCE, PRODDATUR, SVVU: A STUDY

K. Kumar
Assistant Professor
College of Veterinary Science,
Sri Venkateswara Veterinary University,
Proddatur, Andhra Pradesh.

Abstract

This study reports on an online survey of 157 veterinary students pursuing their undergraduate, postgraduate and doctoral studies at College of Veterinary Science, Proddatur.The study aims to identify the perception of the resources available, preferred electronic gadgets, advantages, and disadvantages of e-books among veterinary students. The survey findings point out awareness of the study population in the usage of e-books for their education that showed a statistically significant difference for most of the dependent variables between undergraduate and postgraduates while there was no substantial difference with the perception of PhD students.

Keywords: E-Books, Library Users, Veterinary Science, Sri Venkateswara Veterinary University, User study, Information use pattern

Introduction

E-books are text, pictures, and even audio/video bundled into a single electronic file, downloaded and read on the screen on a computer, PC, Mac, laptop, PDA or any other form of computer. Like a paper book, it may have numbered pages, a table of contents, photographs and graphics. Purchasing and downloading e-books via the Internet is very simple and convenient. It is just like every other product being bought. The only difference is that one will be led to a download page or receive the download connection in an email after paying (Wang 2020). E-books has had a positive effect on the quality of education offered by introducing technology into classrooms. Students and teachers unanimously decided upon the advantages of using e-Books in education. Electronic books aim to simplify the overall learning process and develop it. Digital Books make the process of learning more engaging and interactive (Oriogu et al 2018). Students will now actively engage in the learning process instead of listening to one person constantly talking. Integrating eBooks into teaching in the classroom makes learning an enjoyable experience and engagement. The days when students had to bring a bag full of books to classrooms and back home every day are gone. With eBooks entering the educational domain, one computer is sufficient to include the syllabus of the entire year. Students at a very early age can be exposed to these digital books, right from kindergarten to university level, ensuring that learning never gets boring for them. An efficient method of learning must ensure that students are actively engaged in the process of learning. E-Books also launched an educational reform that allows learners to learn quicker and better (Soan et al, 2019).This study examined the knowledge of e-books among veterinary students at the College of Veterinary Science, Proddatur. Also, their extent of use of e-books. the key objectives of this survey were to determine the understanding of students of the availability of e-books for educational purposes; and, from their point of view, describe the advantages and disadvantages of the same.

Review of Literature

The use of electronic books among postgraduate students in the Department of Knowledge Studies at Zululand University, South Africa, was decided by Ngema (2020). The thesis used the quantitative method of analysis underpinned by a data collection survey research design.The results showed a high

Third International Conference on Science and Technology Metrics (STMet 2021)

December 06-08, 2021

Virtual Mode Event

Kutty Kumar

has participated in the Third International Conference on Science & Technology Metrics held online on 6th - 8th December 2021 [http://www.socio.org.uk/stm]

He/she has presented a paper on **"Mapping of PubMed Literature on Early Trends of 2019 Novel Coronavirus (COVID-19)"**

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Sl. No.	Date	Time	Topic	Speaker	Email Address
			Day-1		
1.	**13/7/2021**	17:00 to 17:30	**Inaugural Session**	**Chairman:** **Prof. Dr. A.U. Bhikane,** Associate Dean, PGIVAS, Akola, Maharashtra. Email: adpgivas@gmail.com **Chief Guest:** **Dr. B. Rai,** Director, ICAR-Central Institute for Research on Goats, Makhdoom, U.P. Email: brai21464@gmail.com	
2.	13/7/2021	17:30 to 18:30	Housing goats under hot climatic conditions	**Dr. Sanjay Mandakmale**, Senior Scientist, Dr. M.P.K.V., Rahuri Email: mandakmale@gmail.com	
3.	13/7/2021	18:30 to 19:30	Herd health management of goats	**Dr. Ashok Kumar** Valupadasu, Deputy Director of Animal Husbandry, Telangana State Email: sathya0grazing@gmail.com	
			Day-2		
4.	14/7/2021	17:00 to 18:00	Developing Feed and Fodder resources for goats under Indian climatic conditions	**Dr. S.K. Mahanta** Principal Scientist, ICAR-IARI, New Delhi Email: mahantask@rediffmail.com	
5.	14/7/2021	18:00 to 19:00	Marketing and Export opportunities in Marketing of goats	**Dr. M. Rajsekaran,** Managing Director, Ideal Goat Farms Pvt. Ltd., Nammakal Email: idealgoatfarms@gmail.com	

6.	14/7/2021	19:00 to 20:00	Portable meat production and retailing facility (P-Mart) for Goats	**Dr. Girish Patil S.** Principal Scientist ICAR-NRC, Meat, Hyderabad Email: girishlpt@gmail.com	
			Day-3		
7.	15/7/2021	17:00 to 18:00	Major reasons of Kid mortality and its control.	**Dr. Ashok Kumar,** Principal Scientist, Veterinary Clinical Medicine, ICAR-CIRG, Makhdoom Email: akumar63@gmail.com	
8.	15/7/2021	18:00 to 19:00	Breeding strategies and selection of best quality goats under changing climate	**Dr. Gopal Gowane,** Senior Scientist, ICAR-NDRI, Karnal Email: gopalgowane@gmail.com	
			Day-4		
9.	16/7/2021	17:00 to 18:00	Assisted reproductive techniques for augmenting goat production	Dr. C.H. Pawshe, Professor and Head, Department of ARGO, PGIVAS, Akola. Email: chp11@rediffmail.com	
10.	16/7/2021	18:00 to 19:00	Feeding management of goats: challenges and practical solutions	Dr. U. Krishnamoorthy, Ex-Professor and Head, College of Veterinary Science, Bengaluru Email: ukmthy@yahoo.com	
11.	16/7/2021	19:00 to 20:00	Climate change: health issues in goats and control strategies	Dr. K. Lakshmi Kavitha, Associate Professor, Department of Veterinary Mircobiology, CVSc Tirupati Email: kommalapatiin@yahoo.co.in	
			Day-5		
12.	17/7/2021	17:00 to 18:00	Practical tips on general management practices of goats	Dr. Ashok Kumar Valupadasu, Deputy Director of Animal Husbandry, Telangana State Email: sathya0grazing@gmail.com	

SRI VENKATESWARA VETERINARY UNIVERSITY

Administrative Office, Dr. Y.S.R Bhavan, Tirupati

Memo.No. 3982 /Extension/2021 **Dated:20/12/2021**
Computer No.350228

Sub: Sub: SVVU, TPT- CCVEC - Organization of three days Refresher Training Programme from 20th -22hd December 2021 to the Field Veterinarians of all districts (13) of the state - Deputation of Resource Persons- orders - Issued.

Ref: Proc.No.3982/Extension/2021 dated 04-09-2021 of the Director of Extension, SVVU, Tirupati.

-:ooo:-

The Centre for Continuing Veterinary Education and Communication (CCVEC), SVVU, Tirupati is organizing three days refresher training programme on "Advanced Diagnostic Approaches and Therapeutic Management of Livestock Diseases" from 20th -22nd December,2021 to the Field Veterinarians of all districts (13) of the state.

Therefore, the following teaching staff are deputed to attend three days refresher training programme on "Advanced Diagnostic Approaches and Therapeutic Management of Livestock Diseases" from 20th -22nd December, 2021 to the Field Veterinarians of all districts (13) of the state organized by Centre for Continuing Veterinary Education and Communication (CCVEC), SVVU, Tirupati to act as resource persons on the dates mention against heir names a Col.No.3 .

S.No	NAME OF THE RESOURCE PERSON	DATE	TIME	VENUE
(1)	(2)	(3)	(4)	(5)
1	Dr. V. Vaikunta Rao Associate Dean CVSc, Proddatur	20.12.2021	11.00 AM to 1 PM	CCVEC SVVU, Tirupati
2	Dr. K. Veerabrahmaiah Professor Dept. of Veterinary Gynaecology and Obstetrics CVSc, Tirupati	20.12.2021	2 PM to 3.30 PM	CCVEC SVVU, Tirupati
3	Dr. M. Raghunath Professor Dept. of Veterinary Clinical Complex CVSc, Tirupati	20.12.2021	3.30 PM to 5 PM	CCVEC SVVU, Tirupati

4	Dr. N. Dhanalakshmi Professor and Head Dr. M. Raghunath Dept. of Veterinary Clinical Complex CVSc, Tirupati	21.12.2021	9 AM to 11 AM	Practical exposure session at Veterinary Clinical Complex CVSc, Tirupati
5	Dr. R.V. Suresh Kumar Professor & University Head Dept. of Veterinary Surgery and Radiology CVSc, Tirupati	21.12.2021	2 PM to 3.30 PM	CCVEC SVVU, Tirupati
6	Dr. Lakshmi Kavitha Associate Professor & Head, Dept.of Veterinary Microbiology, CVSc, Tirupati.	21.12.2021	3.30 PM to 5 PM	CCVEC SVVU, Tirupati
7	Dr.Vijayalakshmi, Associate Professor, Dept.of Veterinary Microbiology, CVSc, Tirupati.	22.12.2021	9 AM to 10.30 AM	CCVEC CVSc, Tirupati
8	Dr. G. Vani Assistant Professor Dept. of Veterinary Surgery and Radiology CVSc, Tirupati	22.12.2021	2 PM to 3 PM	CCVEC SVVU, Tirupati

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Study about Participation of Women in Dairy Farm Management Practices in Krishna District of Andhra Pradesh, India

A. Anitha[1*]

DOI: 10.9734/bpi/ctas/v2/2633E

ABSTRACT

Women play a major role in dairy farm activities in India. They do most of the work in Animal Husbandry, yet remain as invisible workers. The present study is conducted to document their contribution to dairy farming. The participation of rural women in dairy farm activities is studied in Krishna district of Andhra Pradesh. A total of 225 farm women were selected based on their land holding capacity. The study revealed that women from small farmer category had more participation in taking animals for pregnancy diagnosis (81.33%) and post calving care (77.33%). Women under landless category were more involved in regularly taking animals for grazing (45.33%), green fodder collection and feeding (68%) and feeding animals with concentrates (88%). Feeding of animals with dry fodder regularly was more in small women dairy farmer category (89.33%) and landless (86.66%) than that in medium (56%) farm women category. Cleaning of animal sheds regularly was high in landless (76%) and small (69.33%) farm women than in medium (44%) farm women. Majority of women under landless category were regularly using disinfectants for cleaning of animal sheds (49.33%). Regular involvement in disposing of dung and composting of dung is high in women under landless (69.33%) and small (65.33%) farm women categories. Women under small (76%) and landless (73.33%) farmer category were regularly taking care of sick animals. More number of medium (9.33%) women dairy farmers were regularly involved in purchase of animals compared to landless (5.33%) and small (1.33%) farm women.

Keywords: Farm women; participation; dairy; feeding; cleaning.

1. INTRODUCTION

Rural Women form the most important productive work force in the economy of majority of the developing nations including India. In India, about 88 per cent of rural women engage in agriculture and allied activities. Women play significant and crucial role in agricultural development and allied fields like dairy farming, vermi compost production etc [1]. Dairy in India plays a crucial role in the rural economy that has the highest of generating income and employment through augmenting productivity of milch animals [2]. Despite the fact women in India do most of the work in animal husbandry yet their contribution has largely been ignored and inadequately acknowledged. Hence there is a need to document their contribution to dairy farming. The present study was conducted to study the participation of farm women in dairy management practices in Krishna district of Andhra Pradesh.

A total of 225 farm women were selected for the study (3 mandals from each of the 5 animal husbandry divisions, 5 villages from each mandal and 3 women dairy farmers from each village) based on their land holding capacity (landless-0 acres, small farmer- up to 5 acres, medium farmer - 5-10 acres). The data were collected by administering the interview schedule and analyzed by statistical methods according to Snedecor and Cochran [3]. The information obtained was analysed and interpreted.

[1]*Department of Livestock Production Management, N.T.R College of Veterinary Science, Gannavaram-521 102, Andhra Pradesh, India.*
**Corresponding author: E-mail: dranithaalapati@gmail.com;*

Chapter 12
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Relationship between Body Condition Score and Milk Production Parameters in Murrah Buffaloes: An Observational Study

A. Anitha [a#*]

DOI: 10.9734/bpi/nvbs/v7/2874E

ABSTRACT

A study was carried out to assess the influence of BCS on milk production parameters of lactating Murrah buffaloes. India is the origin for the best buffalo breeds and Murrah buffalo is the highest milk producing buffalo breed in the world. The postpartum changes in Body Condition Score (BCS) studied from calving to four months of lactation in 40 Murrah buffaloes showed that BCS decreased from calving to two months of lactation and then gradually increased. Significant ($P < 0.05$) inverse relationship ($r = -0.96$) was observed between BCS and milk yield. The effect of BCS at calving (BCSc) on the milk production parameters were studied in 40 Murrah buffaloes divided into 4 groups of 10 buffaloes each based on BCSc (G1 – 2.5 to 2.99, G2- 3.0 to 3.49, G3- 3.5to 3.99 and G4- 4.0 to4.49). The total milk production (kg) upto 4 months of lactation, peak milk yield (kg), persistence, milk fat per cent, milk protein per cent and SNF per cent were 1030.93, 9.50, 1.65, 6.44, 3.39 and 8.99, respectively for G1 group, 1197.12, 11.60, 1.69, 7.54, 3.74 and 9.34 respectively for G2 group, 1658.67,16.50,1.77,8.62, 4.24 and 9.84, respectively for G3 and 1359.92, 13.75, 1.68, 9.37, 3.97 and 9.57, respectively for G4 group. Buffaloes of G3 group had significantly ($p<0.01$) more milk yield, peak milk yield, milk protein and SNF compared to the other groups where as buffaloes of G4 group had significantly ($P<0.01$) more milk fat.

Keywords: Body condition score; milk yield; peak milk yield; persistence milk components; buffaloes.

1. INTRODUCTION

The Body Condition Score (BCS) system is a subjective method to assess the body fat reserves and is used as an indirect indicator of energy balance [1,2]. The BCS is identified by researches and farmers as an important factor in dairy bovine management [3]. The BCS of animal indirectly reflects the farm management or even more close to feeding management of the animal [4]. BCS is an universally accepted, non invasive quick and in expensive method to estimate the degree of fatness.

BCS of dairy cattle has been recognized as a valuable tool in predicting the productive performance [5]. The rate of increase in milk yield in early lactation is more desirable for the total milk yield and may more accurately reflect the dynamic biological changes experienced by the cows. Conclusions of studies which investigated the BCS and its relationships to milk yields were also variable [6,7,8]. The rate of increase in milk yields was also variable. Gransworthy [9] reported that the cows with higher BCSc lost more body condition during lactation, which could negatively influence their milk yield. Many studies on BCS system also reported the association of overly fat dry cows with postpartum complications and thin cows with reduced milk yield [10]. Primiparous cows can attain an ideal BCS at calving through sufficient prepartum management practices, even though a slight drop in the prepartum BCS may be a warning of post partum risk of poor productive performance [11].

[#]*Associate Professor;*
[a] *Department of Livestock Production Management, N.T.R College of Veterinary Science, Gannavaram-521 102, Andhra Pradesh, India.*
**Corresponding author: E-mail: dranithaalapati@gmail.com;*

Biography of author(s)

A. Anitha
Department of Livestock Production Management, N.T.R College of Veterinary Science, Gannavaram-521 102, Andhra Pradesh, India.

She Joined as an Assistant Professor in Sri Venkateswara Veterinary University, Tirupati, India, 2009. She Developed New Body Condition Scoring technology in Murrah buffaloes which is published internationally and used widely by the researchers and farmers to assess the physical, production, reproduction and health traits in dairy animals. She has 12 years of Experience in teaching UG courses and 9 years in PG courses regularly. She has vast experience in the field of management of farm animals. She prepared laboratory manuals for B.V.Sc & A.H courses for many students. She authored some papers entitled 1. Ruminant Production and Management, Paper 2. Non- Ruminant Livestock Production and Management for the Intermediate Vocational Course, Livestock Management & Dairying wef 2018-19, published by the Board of Intermediate Education, AP. Acted as External examiner and external expert to set up question papers of UG and PG courses to other Universities. She attended 10 workshops, training programmes and refresher courses and updated with the recent advances. She served as a guest lecturer to science students of other institutions. She Published 37 research articles in international and national journals. She Guided 11 MVSc students in the cadre of major and minor guide. She has presented papers in 7 international and national conferences. She Acted as Co-PI for the RKVY funded Research Project entitled "Supply of Superior germplasm of LWY piglets at CVSc, Proddatur for 2011-12 and 2012-13. She acted as peer reviewer of manuscripts for 7 international journals. She Prepared manuals, pamplets, booklets and folders on scientific management practices of livestock in telugu and published 12 popular articles and delivered 15 radio and TV talks to educate the farmers on livestock management. She organized around 10 training programmes to farmers and field veterinarians on livestock rearing. She delivered around 15 invited lectures on livestock management in scientific meetings, workshops and seminars. She awarded Best poster presentation at National Conference of Indian Society of Animal Production Management (ISAPM) held at Jaipur in 2020, awarded International Education Excellence Award in Livestock Production Management by Centre for Professional Advancement, West Midlands, United Kingdom in January, 2021, and Awarded Outstanding Scientist Award in Veterinary Science By VDGOOD Professional Association in March, 2021.

DISCLAIMER
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(2) Mônica Calixto Ribeiro de Holanda, Universidade Federal Rural de Pernambuco – UFRPE, Brasil.
(3) Lucas Jose Luduverio Pizauro, Sao Paulo State University, Brazil.

Chapter

Gut Health and Immunity in Improving Poultry Production

Naga Raja Kumari Kallam and Veerasamy Sejian

Abstract

A healthy gastro intestinal system is important for poultry to achieve its maximum production potential. This paper aims gut health and immunity to improve production in the poultry sector. Genetics, Nutrition and Bio security ate the factors influences the production. Gut consisting of various pH and micro biota throughout is an advantageous feature to prevent infections. Various components like Goblet cells, paneth cells, endocrine cells and absorptive enterocytes, tight junctions, GALT and Mucus play a major role in gut health. Balanced diet with optimum carbohydrates, proteins, amino acids, minerals, vitamins, enzymes, organic acids and good management practices are important for improving production. Alteration in supplementation essential amino acids, Zn, Vit E, Se ... viz. are needed according to changes in environment and production state of the bird to develop good immunity. Stress free environment with fine hormonal balance are imperative for maximum output. Exploration of genes involved in resistant to food borne pathogens and research towards bio markers for gut health is the need of the hour. In can be concluded that good gut health and immunity play a key role in production. These can be achieved y maintaining birds with optimum nutrients and stress free environment.

Keywords: gut health, immunity, micro biota, poultry, production

1. Introduction

The emerging global agrarian crisis associated with the growing human population has signified the role of livestock sector in catering their nutritional demands. Among the livestock species, poultry sector has emerged as the fastest growing enterprise over the years with their significant contribution to the total animal protein production as well as consumption [1, 2]. Accompanying this growth, the poultry industry is faced with an enormous challenge to maintain the health and well-being of the birds.

1.1 Global significance of poultry production

Remarks of [3] indicate predicted human population by 2050 is 2097 millions means expecting addition of 877 million to the existing population of 1220 millions.

As of now the available eggs are 58no's, and meat is of 2.2 kg/capita/annum [4]. As per [4] report growth rate of poultry industry is 7.52% and 8.51% in broiler and layer respectively to cater the needs of animal protein demand. Conversely, the projected growth and production output was mainly depends on availability of quality feed ingredients, over and above the emerging and reemergin diseases.

పశువులలో పునరుత్పత్తి యాజమాన్యం- అవగాహన

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Dr. P. Ramya

First Edition

Zoonoses:

Infectious diseases affecting humans and animals

Maya S., Irshad A. & Sunilkumar N. S.
(Editors)

Meat Technology Unit
Kerala Veterinary and Animal Sciences University
Indian Veterinary Association, CVAS, Mannuthy, Kerala

RESEARCH ARTICLE

Molecular Characterisation and Antimicrobial Resistance Patterns of Shiga Toxin Producing *Escherichia coli* Isolated from Farm Water Samples

Ramya Putturu[1], Manyam S. Kumar[2], Angalakudithi J. Babu[3], Sujatha Singh[4], Alla G. Reddy[5]

Abstract

Shiga toxin-producing *Escherichia coli* (STEC) strains are considered the most common food-borne zoonotic pathogen and are highly pathogenic to humans in low infectious doses, causing food-borne diseases through consumption of contaminated water or food. Resistance against antibiotics by STEC is a big concern nowadays. Two hundred farm water samples (Cattle-40, Buffaloes-40, Sheep-30, Goat-20, Pig-20 and poultry-50) were collected aseptically from different livestock farms in and around Proddatur, Andhra Pradesh, India and Processed for E. coli isolation, identification with culture method and molecular characterization by PCR. E. coli was characterized as STEC with two genes i.e. stx1 and stx2. All the STEC isolates were subjected to an antibiotic sensitivity test by disc diffusion method against ten antibiotics. Results showed that out of 200 farm water samples, 196 were positive for *E. coli* with an overall prevalence of 98% (196/200) and 62.2% (122/196) for STEC by PCR. Antimicrobial susceptibility test by disc diffusion method against ten antibiotics revealed the higher resistance to Cepahlothin (100%) followed by Tetracyclin (98.4%), Ampicillin (96.7%), Streptomycin (95%), Sulphonamides (91.8%), Trimethoprim (84.4%), Kanamycin (34.4%), Chloromphenicol (17.2%), Colistin (9.0%) and least resistance to Gentamycin (4.9%).

Keywords: Antimicrobial resistance, Escherichia coli, Farm water samples, Shiga toxin producing

Ind J Vet Sci and Biotech (2022): 10.48165/ijvsbt.18.4.15

Introduction

Shiga toxin-producing *E. coli* (STEC) strains are considered the most common food-borne zoonotic pathogen causing various disease conditions in animals and humans (Kumar *et al.*, 2014). Ruminants are considered as an important source of STEC and cattle are regarded as the primary reservoir (Perera *et al.*,2015). STEC strains are highly pathogenic to human in low infectious doses, causing food-borne diseases through consumption of contaminated water or food (Dweik *et al.*, 2012). Shiga toxin (stx1 & stx2) is the key factor in STEC pathogenesis (Koutsoumanis *et al.*, 2020) which is toxic to human colonic, ileal epithelial and endothelial cells. These STEC strains, especially those with stx2, cause a variety of human diseases ranging from diarrhea (Bruyand *et al.*,2018) to hemorrhagic colitis (HC), thrombotic thrombocytopenia purpurea (TTP), and hemolytic uremic syndrome (HUS) with fatal consequences (Walker *et al.*, 2012).

The detection of STEC strains by conventional methods is laborious and time consuming and there is a possibility of getting false results (Orth *et al.*, 2009). Molecular methods are sensitive, specific, and rapid as it is less laborious, time saving compared to immunology-based techniques. The development of PCR-based methods for detecting pathogens or virulence factors (Shahi *et al.*,2013) can be used for the initial screening of the presence of microorganisms from different samples.

Hence, considering the above facts, the present study was designed to detect the prevalence and antimicrobial

[1]Department of Veterinary Public Health and Epidemiology, College of Veterinary Science & A.H. Proddatur, Kadapa, Andhra pradesh, India.

[2]Department of Livestock Products Technology, College of Veterinary Science & A.H Rajendranagar, Hyderabad, Telangana, India.

[3]Department of Veterinary Public Health and Epidemiology, College of Veterinary Science & A.H, Tirupathi, Andhra pradesh, India.

[4]Department of Veterinary Public Health and Epidemiology, College of Veterinary Science & A.H., Korutla, Telangana, India.

[5]Department of Veterinary Pharmacology & Toxicology, College of Veterinary Science & A.H., Hyderabad, Telangana, India.

Corresponding Author: Ramya Putturu, Department of Veterinary Public Health and Epidemiology, College of Veterinary Science & A. H. Proddatur, Kadapa, Andhra pradesh, India., e-mail: putturu-ramya@gmail.com

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RUMINANT CLINICAL NUTRITION

Jaspal Singh Hundal
Udeybir Singh Chahal
Jaswinder Singh

List of Contributors

Amit Challana
Assistant Professor, Department of Veterinary Anatomy
College of Veterinary Sciences, Rampura Phul-151103, Bathinda, Punjab.
e-mail: amitchallana@gmail.com

Amit Sharma
Assistant Professor, Department of Animal Nutrition
GADVASU, Ludhiana-141004, Punjab
e-mail: amitvet2013ndri@gmail.com

Anant Simran Singh
Assistant Professor, Instructional Livestock Farm Complex
College of Veterinary Sciences, Rampura Phul-151103, Bathinda, Punjab.
e-mail: dranantsidhu0117@gmail.com

Aparna
Associate Professor, KVK Roopnagar
PAU, Ludhiana-141004, Punjab
e-mail: aparnapau@gmail.com

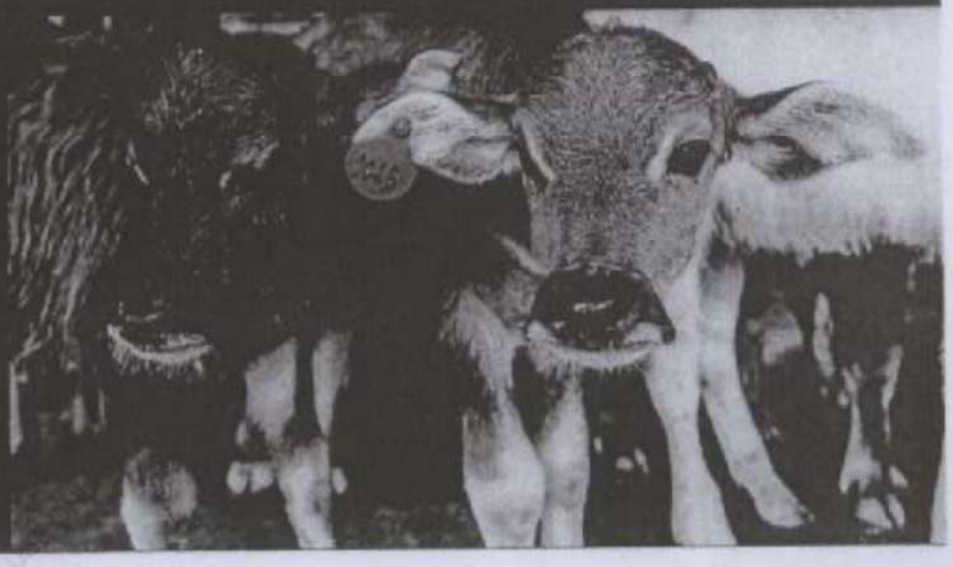
A.P.S. Sethi
Professor-cum-Head, Department of Animal Nutrition
GADVASU, Ludhiana-141004, Punjab
e-mail: apss_pau_ldh@yaoo.co.in

C.P. Modi
Research Scholar, Department of Animal Nutrition
College of Veterinary Science and A.H., SDAU
Sardarkrushinagar-385506, Gujarat
e-mail: 814085charmi@gmail.com

Daisy Wadhwa
Professor, Department of Animal Nutrition
DGCN, COVAS, CSKHPKV, Palampur-176062, H.P.
e-mail: daisynutrition@rediffmail.com

Dhiraj Kumar Gupta
Associate Professor, Veterinary Medicine
GADVASU, Ludhiana-141004, Punjab

In general the cervical vertebrae were developed from three principal centers of ossification. Atlas showed total three ossification centers. Axis showed total four ossification centers. The location of ossification for neural arch and body of axis were first appeared at 64 days of gestation in Buffalo. Thoracic vertebrae developed from four ossification centers. The lumbar vertebrae were developed from three ossification centers. Sacral vertebral ossification centers showed 3 for each vertebra. The first four thoracic vertebral developed each from three centers of ossification. The cartilaginous activity of the sternum was first identified histologically at 54 days as the bilateral cores of cartilage cells. The location of ossification in the sternal segments was central, unpaired and continued to the area of 7th sternal segment. Ossification was first noted in the shaft of the ribs from 2nd to 6th at 59 days and at 64 days all ribs. The secondary ossification centers have appeared on the heads of first 6 pairs of ribs at 155 days and tubercular facets were identified radiographically at 181 days in the ribs. In one specimen, the incidence of supernumerary ribs was also noted.



J. Bhagyalakshmi
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T. S. Chandrasekhara Rao

Development of Vertebral Column of Buffalo

A study on Prenatal development of Vertebral column, ribs, and sternum of buffalo (Bubalus bubalis)

The authors Dr. J. Bhagyalakshmi is working as assistant professor, Dr. P. Jagapathi Ramayya is working as Professor & Head in the department of Vetrinary Anatomy and Dr. T. S. Chandrasekhara Rao, is working as Dean, Sri Venkateswara Veterinary University, Tirupati, India.

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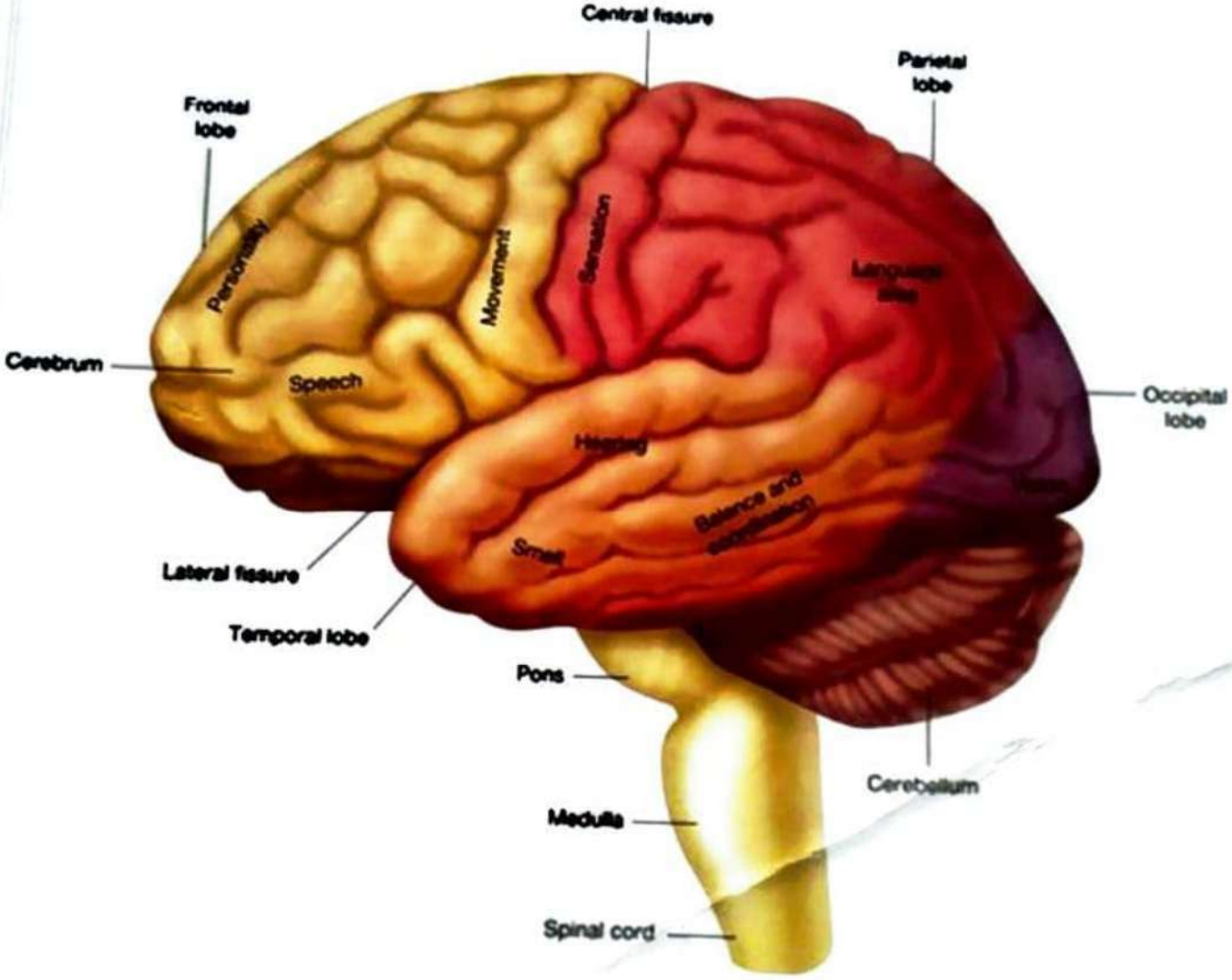

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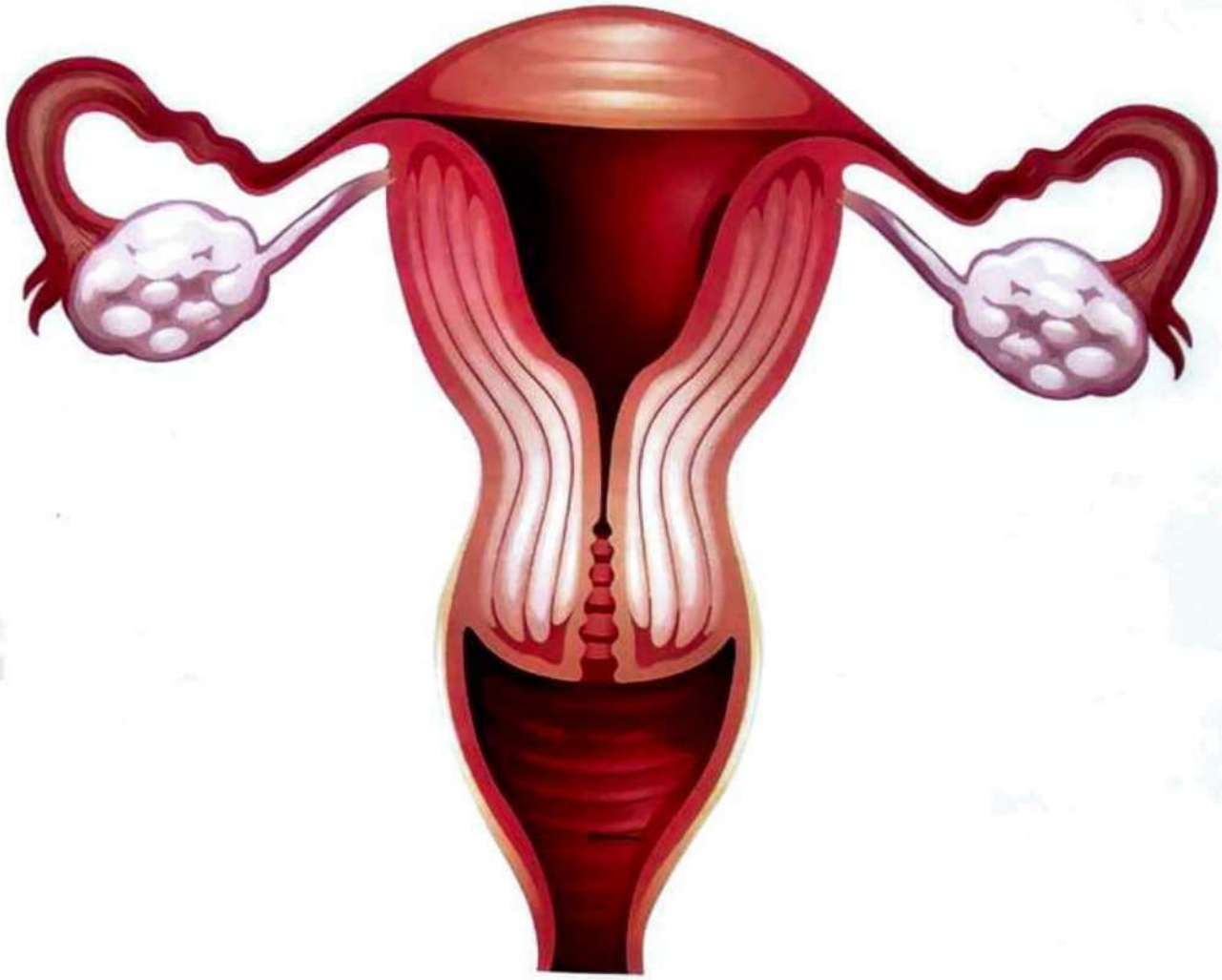

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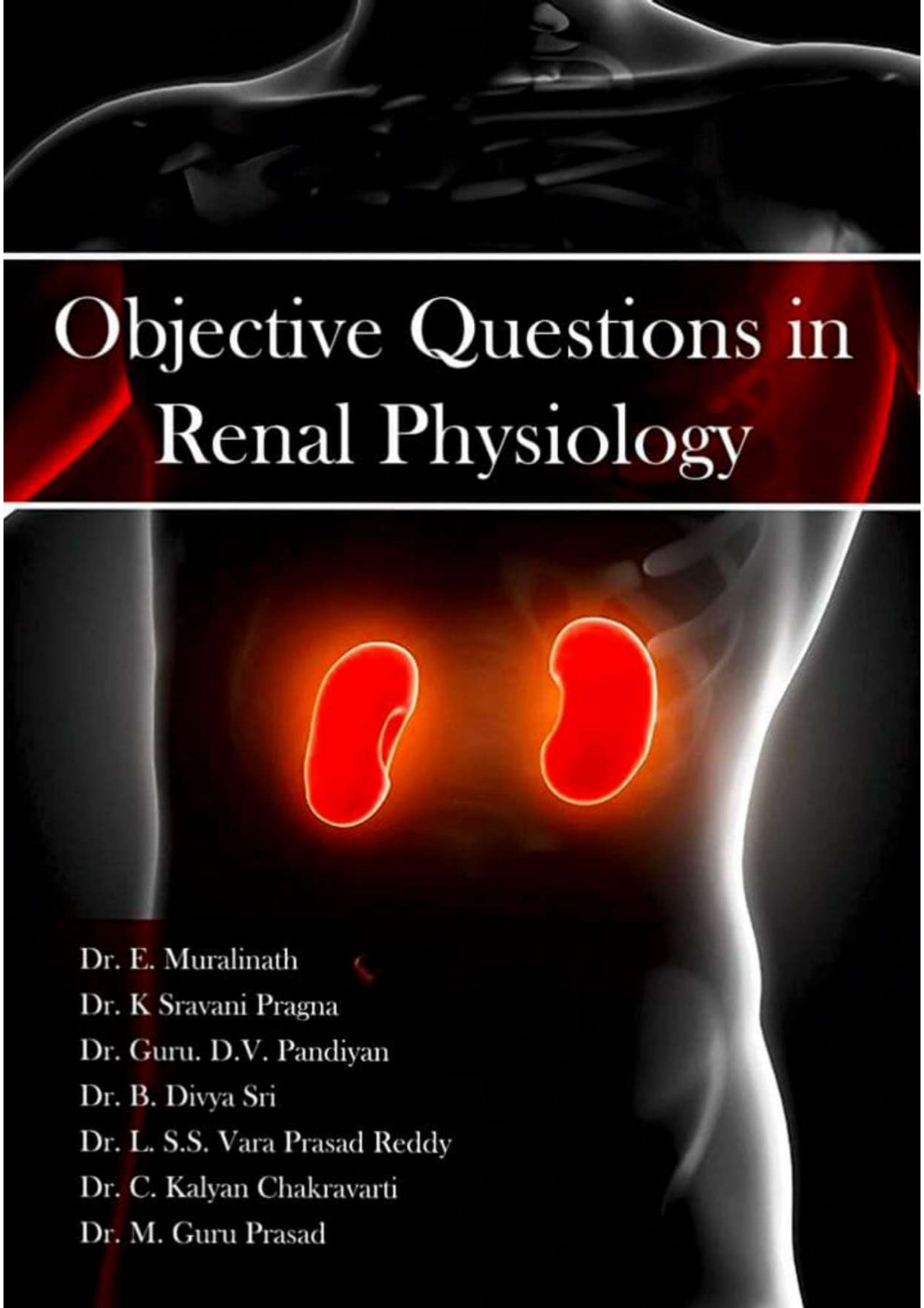

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Dr. P.ASHALATHA
Associate Professor
Department of Livestock Production Management
N.T.R.College of Veterinary Science,
Gannavaram, Krishna District
Andhra Pradesh-521101.

Composed &Designed at
Department of Livestock Production Management
N.T.R.College of Veterinary Science,
Gannavaram, Krishna District
Andhra Pradesh-521101.
Phone: 9398590570
Email: charvy07@rediffmail.com

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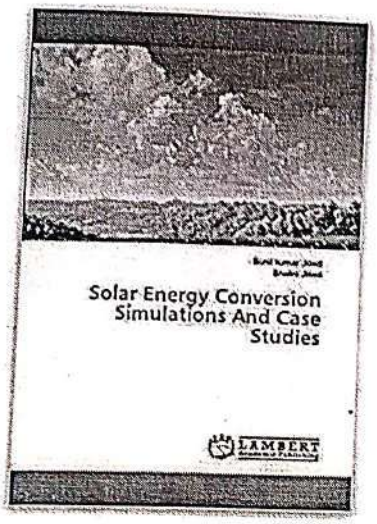

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Essentials of Canine Cardiovascular Medicine

V. V. Rao

In this book, Section 1, covers Normal Anatomy and Physiology of Cardiovascular System. Section 2 describes Etiology and Pathophysiology of Heart failure. Section 3 describes Clinical Evaluation of Heart Disease. Section 4 discusses General Therapeutic concepts. Section 5 deals with Dysrhythmias. Acquired Heart Diseases are covered in Section 6. Section 7 describes Congenital Heart Diseases. References included in Section 8. This book is useful for veterinary academicians, students and small animal practitioners in making diagnosis and management of cardiac diseases in dogs.

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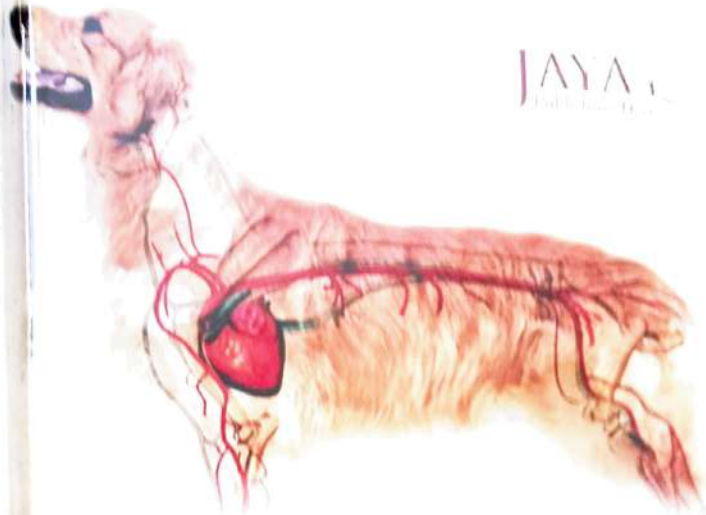
Essentials of Canine Cardiovascular Medicine

V. V. Rao



Essentials of Canine Cardiovascular Medicine

V. V. Rao

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Perception of LIS MOOCs among Library Science Professionals and Scholars: An Online Survey

K.Kumar[a*], andV. Rajeskar[b]
[a]Library and Information Science,
College of Veterinary Science,
Sri Venkateswara Veterinary University,
Proddatur, Andhra Pradesh, India.
[b]University Library,
Anna University, Chennai, India.
*Corresponding Author: kumarkkutty@gmail.com

ABSTRACT

The study intends to provide reliable information for educators and students of Library and Information Science with regard to different features of MOOCs (Massive Open access Online Courses) through an online survey. The study findings reveal the observation of LIS professionals' and scholars' towards benefits and hurdles encountered while pursuing MOOC, further their preference criterion to get enrolled in a course, and familiarity with various LIS MOOCs are highlighted. The study concluded that even though LIS scholars are well aware of MOOCs, curiosity towards the courses are still in the budding stage and enormous initiatives are to be taken in order to implement MOOCs in academic Universities.

Keyword: MOOCs, Online Education, Open Access, LIS Scholars, Learning Community

1. Introduction

One of the most recent educational phenomena related to distance learning education is MOOCs (Massive Open Online Courses). They maintain and extend certain smart features that attract students to distance learning education. Joining courses through the Internet became a renowned method of distance learning, a course format initially more equated with correspondence study (Pittman, 2013); Enormous students choose distance learning education each year, according to a survey by Fern University in Hagen, a German university specialized in this type of learning (Otto et al 2016). Luis Otoni (2016) explains that MOOC courses are important to assist formal education and distance learning, especially in the technology area. Pappano (2012) states that MOOCs have consolidated as a means for instructing in universities such as Princeton, Brown, Columbia and Duke. Various features of MOOCs are listed in Figure 1.

A study of Veterinary Scholars' Perception of MOOCs

Kutty Kumar

Information and Learning Sciences
ISSN: 2398-5348
Publication date: 11 November 2019
(International Standard Serial Number)

Abstract

Purpose

Massive open online courses (MOOCs) are a currently trending e-learning platform that presumably attract thousands of participants because of boundless participation, are open to any person to enroll, are free to begin and are delivered completely online, thus contradicting the spatial limitations of a traditional classroom. This study aims to present the findings of a study among veterinary science students examining their perceptions of MOOCs. In total, 200 participants were randomly selected for the survey, out of which 177 responded, owing to a response rate of 88.7 per cent. Majority of the respondents (93 per cent) opined MOOCs supplement other learning methods and provide lifelong opportunity. A study report established that Coursera is the largest platform by user base (82 per cent), followed by Udemy (70 per cent), and 65 per cent knowledge seekers ranted the enormous propaganda about MOOCs are not because of the technology's inherent edifying value, but because of the incredible potentials of lower costs. The participants in this survey valued their course and overall MOOC experience pleasing.

Design/methodology/approach

The aim of the study is to explore veterinary students' perception of MOOCs featuring in their subject of interest. The questionnaire was written in English because it is the teaching language for undergraduates and postgraduates in most Indian higher education institutes, including the one used as a context for this study. The online questionnaires were electronically mailed to a sample of veterinary students (undergraduate and postgraduate) with a consent form seeking their permission for participation in this study and swearing them the confidentiality of their responses. The e-mail included information about the purpose of the study as well as the URL to the survey site, demographic questions on age, gender and

RECENT RESEARCH TRENDS IN VETERINARY SCIENCES AND ANIMAL HUSBANDRY

Volume - 4

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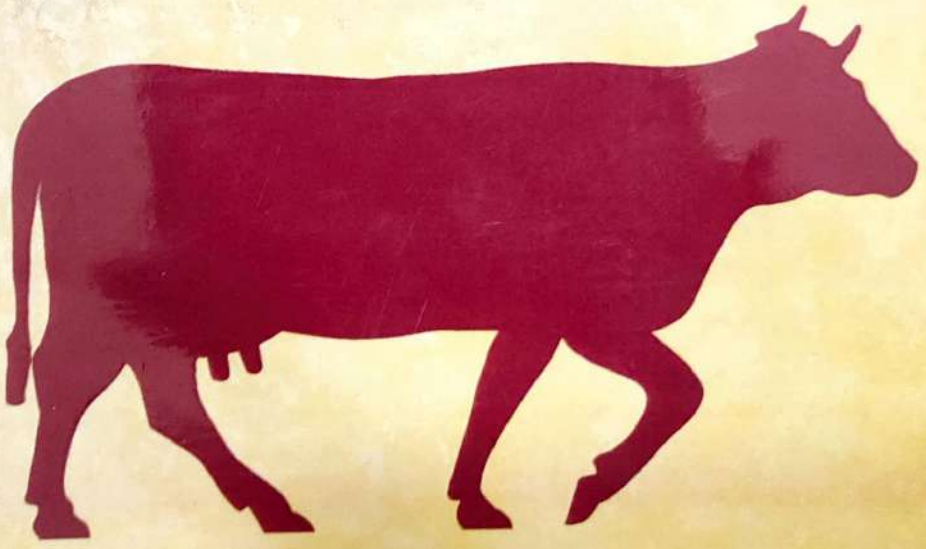
Subha Ganguly



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Contents

147

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Dr. T. SRINIVASA RAO
M.V.Sc., Ph.D.
Associate Professor & Head
MTC Course Director

Tel. No. +91 8676-253781
+91 8676-253782 (Ext - 236
Fax No. +91 8676-252335
Mobile. +91 9666676363
E mail:tumatisrinivas2001@gmail.com

Dt. 02-12-2018

To
Dr. K. Lakshmi Kavitha Ph.D.
Professor & University Head
Dept.of Veterinary Microbiology
NTR CVSc., Gannavaram - 521102

Dear Dr. Lakshmi Kavitha,

Sub: Model Training Course (MTC) on **"Role of Veterinarian in One Health Approach:Capacity building for Mitigation of Emerging zoonoses and superbugs"** from 10 – 17th December, 2018- Schedule of lecture - Reg.

***

Dear Sir

Thank you for accepting our invitation for the guest lecture during the **Model Training Course (MTC) on "Role of Veterinarian in One Health Approach: Capacity building for mitigation of emerging zoonoses and suerbugs "** sponsored by Directorate of Extension, MOA& Farmers Welfare, GOI and being organized by Department of Veterinary Public Health & Epidemiology, NTR College of Veterinary Science, Gannavaram during 10-17th December, 2018

Your lecture on **"Therapeutic applications of lytic bacteriophages – Role in One Health" is scheduled on 10th December 2018 from 3.00 -4.00 pm**

Yours faithfully,

With regards

(T. Srinivasa Rao)

Course director

147

Model Training Course

On

"Integrated Farming systems for Livelihood Security under changing climatic scenario in Indian Farming"

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AN OVERVIEW OF BACKYARD POULTRY PRODUCTION IN INDIA AND IT'S ROLE IN RURAL DEVELOPMENT

Dr. NAGA RAJA KUMARI. K, Assistant Professor, Department of Poultry Science, NTR CVSc, Gannavarm-521102.

Introduction:

Backyard poultry production is an age old practice in rural India. It comprises of rearing indigenous birds (50-60 eggs/bird/annum) with poor production performance. Rural poultry contributes nearly 30% of the revenues in the poultry sector. Animal husbandry plays a major role in alleviating protein deficiency and sustainability of rural economy. Performance of native fowl can be improved by change in husbandry, feeding and better health cover. Indigenous breeds are well known for their tropical adaptability and disease resistance, while their plumage color helps in protecting themselves against predators. Though local chickens are slow grower and poor layers of small sized eggs they are, however, ideal mothers and good sitters (Tadelle, 2003), excellent foragers, and hardy (Darwish *et al.,* 1990) and possess natural immunity against common diseases (Mtambo,2000; Destie *et.al.*, 2011).

Backyard poultry is a handy enterprise with low cost initial investment, and high economic return along with guarantee for elimination of the protein hunger among the poor, which helps to improve the socio economic status of the traditional farmers. FAO classified poultry production systems into four categories based on the volume of operation and level of bio-security. The 4 categories are village or backyard production, commercial production with low bio-security, large scale commercial with high bio security and industrial and integrated production systems. India is the home for many breeds of native chicken like Aseel, Kadaknath, Tellicherry, Haringhata Black, Nicobari, Danki etc. Which are still popular among the rural and tribal areas for back yard and free range system (Chatterjee and Hanushi, 2014).

The most basic and simple backyard production system involving a few hens and a cockerel is essentially a closed system. Home –produced fertile eggs will be hatched to provide replacements, birds feed by scavenging provided with household scraps and crop by-products, will be virtually no veterinary inputs and the remaining eggs and meat produced are consumed within the household. Producers with even slight larger flocks generate cash income from the sale of eggs and birds within local community. Transactions usually take place directly between producers and consumers.

Table:1. The population of desi chicken in India as per the Livestock census, 2012.

	Adults	Young ones (<5months)	Total
Rural	8.82 crores	6.79 crores	15.61 crores
Semi-urban/Urban	0.50 crores	0.26 crores	0.77 crores
Total	9.32 crores	7.05 crores	16.37 crores

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Effective Use of Open Access Journals by the Users of College of Veterinary Science Library, Proddatur:A Survey

Kumar, K
Assistant Professor
Library and Information Science,College of Veterinary Science
Sri Venkateswara Veterinary University, Proddatur
kumarkkutty@gmail.com

Minakshi B. Bondge
Librarian
Maharashtra Mahavidyalaya, Latur

Abstract:This paper presents practice of Open Access Journals (OAJ) by library users of College of Veterinary science, Proddatur. The study adopts survey method and used questionnaire as tool to collect the data from the respondents. The researchers used simple random sampling techniques to choose the study population. The collected has tabulated accordingly the data was analyzed and draw the inferences. The findings of the study revealed that majority of the 66.00% library users are using the OAJ for their study purpose and they agreed that there is an impact of OAJ on their academic carrier.

Key Words: scholarly practice, OAJ, Library Users, Academic, Printed Journals.

1. Introduction

"Open Access Journals (OAJ) are scholarly journals that are available online to the reader without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. They remove price barriers (e.g. subscription, licensing fees, pay-per-view fees) and most permission barriers (e.g. copyright and licensing restrictions)". While open access journals are freely available to the reader, there are still costs associated with the publication and production of such journals. Some are subsidized, and some require payment on behalf of the author. Some open access journals are subsidized and are financed by an academic institution, learned society or a government information center. Others are financed by payment of article processing charges by submitting authors, money typically made available to researchers by their institution or funding agency. Sometimes these two are referred to respectively as "gold" and "platinum" models to emphasize their distinction, although other times "gold" .OAJ is used to refer to both paid and unpaid. The web portal is open to all publishers who put out academic, peer reviewed books and contain as many books as possible, provided that these publications are in Open Access and meet academic standards.

2. Objectives of the Study

- To identify the use and impact of Open Access Journals on Library Users
- To discern the purpose of utilization Open Access Journals
- To recognize the satisfaction of Library Users while using Open Access Journals

3. Limitation of the Study

This study covers only library users of college of veterinary science, Proddatur and had considered only teaching faculties.

Prodigious changes are apparent in the life style and food habits of present day individuals. As the per capita income increased, demand for processed, convenience foods like ready-to-eat, cooked, grilled and takeaways increased manifold. Protein supply deficit can be overcome by utilizing resources hither-to unutilized. Ducks are one of such alternative avenues to meet protein hunger. Duck is still very famous and is in vigorous demand in many areas of the world,especially in Asia. Ducks, reared predominantly for laying purpose are 2nd to chicken in egg production. Spent/culled ducks,marketed after 3-4 laying years, for human consumption has less juiciness, more toughness, less palatability; are the concealed reasons for unacceptability of duck meat by consumers, though there is no substantial decline in nutritive value with escalation of age. Semi-processed/cooked and ready to eat snack food market is accelerating rapidly. Sausages, prepared from comminuted and seasoned meat, are specifically popular as a fast food in big city malls. Preparing ground/emulsion type meat products like sausages is a potential solution to achieve efficient and effective utilization of tough duck meat

Dr.Z. Naveen, born in India and working as Asst.Professor in the Dept. of Livestock Products Technology, obtained MVSc.during 2003. He worked on the quality of Duck meat Sausages during storage and the findings were internationally acclaimed. His recent research interest focused on Nano Zinc incorporated Active Packaging& Nano encapsulation of food

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Recent Trends in Sustainable Poultry Production

This book is aimed at Poultry professionals as it seeks to provide inputs from many authors who, through their contributions, have put in the hands-on knowledge and field experiences to make this book more practical. This book would be a torch bearer for researchers, teachers, students, Industry personnel, as well as entrepreneurs who are eager to refresh their knowledge as it contains newer developments in the several sub sectors of poultry for increasing the efficiency of chicken and egg production.

Dr. Pawan Kumar, who completed his M.V.Sc. in the subject of Poultry Science in the year 1988 from the Department of Poultry Science, Veterinary College Mathura, has sponsored the printing and publication of this book. Nowadays he is working on a mission called "Right to Protein" to educate the common man on the importance of protein in the human diet and to make sure everyone consumes an optimum amount of protein to achieve optimum health and Wellness.

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Recent Trends in Sustainable Poultry Production

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ways. Vitamin A is important for epithelial cell integrity and contributes to a variety of immune-related functions in chickens, including mucosal immunity enhancement and free radical reduction. Vitamin E and C both are known for their antioxidant and anti-inflammatory property during stress conditions. In stressed birds, reared at intensive housing providing several feed additives, such as vitamin C, E, betaine, aspirin, and electrolytes have been tried to minimize the effect of stress. By focussing on this, at CARI, research has been proposed to evaluate the effect of lairage time and anti-stressor supplementation by using above mentioned ingredients on production as well as welfare in transport stressed broiler chickens.

Way forward

Presently in India, few experiments had been conducted to evaluate the stress created due to transport at Indian road conditions. ICAR-CARI is working in this area and standardised transport time of 4 hr as a trigger point for stress (Rokade *et al.*, 2022; Siddharth *et al.*, 2021). In next phase, now CARI is trying to develop an anti-stress product for transporting birds. Welfare issues are raised up more now days after post covid-19 mainly due to more awareness among the public the way and what they are eating. But, still research under Indian conditions on the welfare aspects needed to enhance. The awareness programmes for academician, farmers, entrepreneurs, industry people and veterinarians needed to organise frequently for better understanding of welfare. For government, it is need of hour to launch certain policy changes for better implementation of welfare in poultry sector.

References

On request from the authors

Chapter 17

Sustainable Livelihoods and Nutritional Security with Improved Birds at Backyard: A Scenario in Rural India

Naga Raja Kumari Kallam[1]* and Gautham Kolluri

[1] Department of Poultry Science, NTR College of Veterinary Science, Gannavaram-521102, Sri Venkateswara Veterinary University
[2] Division of Avian Physiology and Reproduction, ICAR-CARI, Izatnagar-243122

In India, Agriculture provides about 100 to 120 days employment to the rural poor. Scanty land holding, land fragmentation and seasonal agriculture are not able to provide full employment to the workforce which in turn creates disguise unemployment. Backyard or homestead poultry farming is common among rural and landless families in India and is a lucrative source of supplementary income. It involves low investment and yields high economic returns, and can be easily managed by women, children and the elderly. Meat and eggs from such birds are inexpensive and rich source of protein and energy for poor households.

Rural backyard poultry sector contribute to poverty alleviation and nutritional improvement. But major constraints are low productive and reproductive efficiency of local chicken, high mortality, poor veterinary health care and extension services and poor housing and nutritional status. With adaptation of improved chicken varieties by rural farmers, enhanced food security and living standards are an outcome of a better understanding and modulation of these constraints. In rural areas, proper use of locally available indigenous feed resources and ethno-veterinary practices, training and educating farmers can be viable options to improve backyard poultry production.

Benefits of backyard poultry farming

- Poultry has no religious taboos, as it is acceptable to all sections of society irrespective of cast, creeds and colour. Presently, poultry

Chapter - 4

A Multipurpose Approach in Utilizing the Cow Dung

Cherryl D. Miranda, Pratik R. Wankhade, Vaibhav Purwar and Bindu S

Abstract

With the onset of modernization, we are forgetting several natural resources like livestock dung. Since time immemorial cattle dung has been used for various purposes and considered auspicious by Indian social system of civilization. According to Ayurveda, Gomeya/cow dung is not a waste product, but it is a purifier of all wastes in the nature. When spread over urban and rural waste in solution form (1:10-1:25 solution), it biodegrades the waste in time. It may be considered as a "gold mine" due to its wide applications in the field of agriculture, energy resource, environmental protection, and therapeutic applications.

Keywords: Cow dung, utilization, agronomy, pharmaceutical, feed, microorganisms

Introduction

Cow dung is a cheap and easily available rich source of microflora. Though cow dung has been used in several studies, but the breed of cow has not been mentioned. As per Indian Vedic scriptures, cow dung obtained from Indian indigenous cow/Bos indicus/Zebu breed is better than that of other newer breeds. Ideally, the source of cow dung as per Ayurveda should be from a healthy Zebu cow, fed upon healthy diet of pastures including various natural herbs and which has been reared hygienically. Apart from cow dung the livestock waste may be used potentially in various effective ways.

The livestock waste is major source of noxious gases, harmful pathogens and odor; hence, it has public health and environmental concern. Therefore, livestock waste is to be managed properly to mitigate production of these pollutants in order to protect the environment. Proper utilization of livestock waste into biogas, compost and vermicompost can be very useful to increase crop yield, sustainability and protect the environment from pollutants. This livestock waste may be used in

Chapter - 2

Temperature Humidity Index (THI) as Summer Stress Indicator

Vaibhav Purwar, Jitendra Kumar, Cherryl DM and Diwakar Verma

Abstract

The changes in the environmental factors like ambient temperature, relative humidity, wind speed and solar radiation causes stresses in cattle. Thermal stress includes both heat stress during extreme summer season as well as cold stress during extreme winter season. THI is calculated based on the relationship between environmental temperature and relative humidity. When the THI is < 72 then there is no stress in animal. Beyond this the stress is recorded in animal. THI can be used as summer stress indicator in farm animal for optimum performance and welfare.

Keyword: THI, stress

Introduction

Stress is a reaction of the body responding to the disturbance in the normal homeostasis, often accompanied with detrimental effects. Domestic animals are facing with several kinds of stress such as physical, nutritional, chemical, psychological and thermal stress. Thermal stress is the perceived discomfort and physiological strains associated with exposure to an extreme hot or cold environment. Thermal stress includes both heat stress during extreme summer season as well as cold stress during extreme winter season. The surplus of produced heat needs to be emitted to the surrounding air. However, this is difficult when the air temperature is already high and relative air humidity is elevated. Heat stress occurs when the animal can't disperse an ample amount of heat to maintain its body heat balance. Heat stress is caused by a combination of environmental factors (temperature, relative humidity, solar radiation, air movement, and precipitation). Such stress can disrupt the physiology and productive performance of an animal (West 2003).

The increase in body temperature caused by heat stress has direct, adverse consequences on cellular function (Hansen and Arechiga 1999).

Recent Research Trends in Veterinary Sciences and Animal Husbandry

Volume - 5

Chief Editor

Subha Ganguly

Department of Veterinary Microbiology, Arawali Veterinary College (Affiliated to Rajasthan University of Veterinary and Animal Sciences, Bikaner), N.H. – 52 Jaipur Road, V.P.O. Bajor, Dist. Sikar, Rajasthan, India

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Chapter - 4

Welfare Issues of Layers in Cages

Cherryl DM, Vaibhav P and Pratik W

Abstract

Poultry production is growing and has gained a huge market worldwide without any taboos. The system of poultry production followed to achieve this demand is intensive cage type. This system reduces the freedom of birds as their movement if restricted and welfare is compromised. There exists several problems because of cage system & few may be considered as indicators of wellbeing. The housing and other general management practices are matter of concern and determine the welfare of layers.

Keywords: Welfare, cage, layers, housing

Introduction

Worldwide, the chickens are commercially trait selected for egg production (layers) and meat production (broilers). The red jungle fowl (*Gallus gallus*) the ancestor of the domestic fowl (*G. gallus domesticus*) that are still abundant today in S.E. Asia (Wood-Gush, 1959). It is generally accepted that domestication and artificial selection have only modified the frequency of behaviour with the changes in thresholds rather than adding or eliminating the behaviours (McBride *et al.*, 1969; Wood-Gush *et al.*, 1978 and Price, 1998). The present day layers show the same behaviour as their ancestors but allocate resources differently compared to the red jungle fowl (Schutz and Jensen, 2001). A good example of natural bird behaviour is nesting behaviour. A study on this behaviour in laying hens showed an intrinsic urge to work for the opportunity to lay in an enclosed nest site (Cooper and Appleby, 2003). Due to these reports it is assumed that laying hens still possess behavioural instincts and needs to be inherited from their ancestors.

In the forest the red jungle fowl spends most of its time in the area which has high bamboo plants as it is assumed to provide protection from predators (Stahl *et al.*, 2002). These birds live in social groups of about 20 to 30 (Collias and Collias, 1996), and they possess the ability to discriminate

4. RFI- acceptability as an indicator of feed efficiency

G.K. Gaur, Cherryl D.M., Seema Yadav and H.O. Pandey

Intensive and modern selection methods have greatly contributed to the genetically superior high yielding animals of current animal production systems, especially in the developed world. However, animal production in the tropics is constrained by everlasting challenges (Oosting *et al.*, 2014), which hinders the growth of livestock industry. Considering the challenges to livestock rearing, a method based on lower feed intake without affecting mature weight and production was initially conceptualized by Koch *et al.* (1963). He introduced Residual Feed Intake (RFI) and defined as the difference between actual intake and the expected requirements of feed for maintenance and body weight gain in cattle. Feed intake could be adjusted for BW and BW gain and be effectively partitioned into 2 components. The primary component is expected for the given level of production and the next is followed by a residual portion. The residual portion of feed intake could be used to identify animals that deviate from their expected level of feed intake and was moderately heritable, with efficient animals having less RFI (Arthur and Herd, 2008).

Feed efficiency is calculated in different ways based on dry matter and nutrient intake. Berry and Crowley (2013) reviewed feed efficiency in two categories; ratio traits and residual or regression traits. Ratio traits refer feed conversion ratio like ratio of output (milk yield or weight gain) to feed consumed and its inverse in terms of feed conversion efficiency (FCE). Ratio traits are popular measures of efficiency in pig and Poultry (Van der Steen *et al.*, 2005). Regression traits include residual feed intake (RFI), which is also referred as net feed intake. Arthur *et al.* (2001) reported that selection based on feed conversion ratio (kg DM intake / kg ADG) leads to selection for greater ADG, which in turn leads to larger mature size. On the contrary, selection based on RFI would not lead to an increase in mature size, yielding more efficient cattle, able to perform adequately even when feed resources are scarce.

Estimation of Residual Feed Intake

Koch *et al.* (1963) developed initial models to calculate the differences between actual and predicted feed intake (RFI) for given level of milk production, body weight gain and maintenance. Feed intake (FI) was adjusted for live weight gain and mid weight (initial weight plus half of the total gain) in the first model. In second model, live weight gain was adjusted for differences in FI and mid weight. RFI was also derived from the regression of actual FI against mean metabolic mid weight over the measurement period and ADG (Arthur *et al.*, 2001).

In general, RFI is calculated in terms of residuals using regression model of dry matter intake on various energy sinks like milk production and live weight (for maintenance requirements). Energy required for other activities and pregnancy may also be included in RFI calculation. Concept of RFI captures variation in activity, protein turnover, digestibility and heat increment of fermentation (Herd *et al.*, 2004)

AAP **New Book Announcement**

Handbook of Research on Food Processing and Preservation Technologies

Forthcoming August 2021

Volume 2: Nonthermal Food Preservation and Novel Processing Strategies

Editors: Preeti Birwal, PhD
Scientist (Processing and Food Engineering), Department of Processing and Food Engineering, College of Agricultural Engineering and Technology, Punjab Agricultural University, Ludhiana, Punjab, India

Megh R. Goyal, PhD, PE
Retired Professor in Agricultural and Biomedical Engineering, University of Puerto Rico, Mayaguez Campus; Senior Acquisitions Editor, Biomedical Engineering and Agricultural Science, Apple Academic Press, Inc.

Monika Sharma, PhD
Scientist, Dairy Technology Division, Southern Regional Station, ICAR National Dairy Research Institute, Bengaluru, India

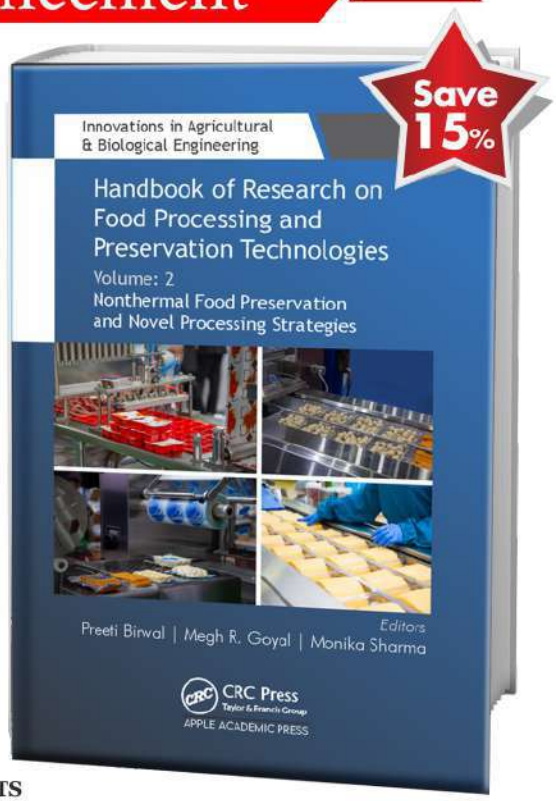
In this volume, several new food processing and preservation technologies have been investigated by researchers that have the potential to increase shelf life and preserve the quality of foods.

This handbook introduces some emerging techniques in the food processing sector, focusing on nonthermal techniques such as high-pressure processing, ultrasonication of foods, microwave vacuum dehydration, thermoelectric refrigeration technology, advanced methods of encapsulation, ozonation, electrospinning, and mechanical expellers for dairy, food, and agricultural processing. These all have a wide range of application.

The volume includes studies that show the successful application of these new technologies on a large number of juices, cheeses, yogurts, soups, egg whites and eggs, vegetable slices, purees, and milk, and the extraction, drying enhancement, and modification of enzymes are reported.

This volume, part of the multi-volume **Handbook of Research on Food Processing and Preservation Technologies** will have tremendous application in different areas of the food industry, including food processing, preservation, safety, and quality evaluation. Other volumes of this handbook cover a wide of other emerging technologies.

Handbook of Research on Food Processing and Preservation Technologies, Volume 2: Nonthermal Food Preservation and Novel Processing Strategies is an excellent reference resource for researchers, scientists, faculty and students, growers, traders, processors, industries, and others for looking for new nonthermal approaches for food processing and preservation.



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Contents continued on side 2

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ABOUT THE EDITORS

Preeti Birwal, PhD, is working as a Scientist (processing and food engineering) in the Department of Processing and Food Engineering at the College of Agricultural Engineering and Technology at Punjab Agricultural University, Ludhiana, Punjab, India. She is currently working in the area of nonthermal food preservation, fermented beverages, food packaging, and technology of millet-based beer. She has served at Jain Deemed to be University, Bangalore, as a member of the board of examiners and placements. She has participated at several national and international conferences and seminars and has delivered lectures as a resource person on doubling farmers' income through dairy technology in training sponsored by the directorate of Extension, Ministry of Agriculture and Farmers Welfare, Government of India. Dr. Birwal has published research papers, an edited book, book chapters, popular articles, conference papers, abstracts, and editorial opinions. She is advising several MTech scholars in food technology and has successfully guided five postgraduate students for their dissertation work. She also serves as an external examiner for various Indian state agricultural universities. She is also serving as editor and reviewer of several journals. Dr. Birwal has been named outstanding reviewer of the month by the online journal *Current Research in Nutrition and Food Science*. She has successfully completed AUTOCAD 2D & 3D certification. She is a life member of IDEA. She holds a B[illegible] in Dairy Technology from ICAR National Dairy Research Institute, Karnal, India; M[illegible]d Process Engineering and Ma[illegible]ment from NIFTEM, Haryana; and PhD (D[illegible] Engineering) from ICAR-NDRI, Bangalore, India. She is recipient of fellowships from MHRD, Nestle Indi[illegible]TE, and UGC-RGNF.

Megh R. Goyal, PhD, PE, is a Retired Professor in Agricultural and Biomedical Engineering from the General Engineering Department in the College of Engineering at the University of Puerto RicoÐMayaguez Campus. He has worked as a Soil Conservation Inspector and as a Research Assistant at Haryana Agricultural University and Ohio State University. He was the first agricultural engineer to receive the professional license in Agricultural Engineering from the College of Engineers and Surveyors of Puerto Rico, and was proclaimed as the "Father of Irrigation Engineering in Puerto Rico for the twentieth century" by the ASABE, Puerto Rico Section, for his pioneering work on micro irrigation, evapotranspiration, agroclimatology, and soil and water engineering. During his professional career of over 52 years, he has received many prestigious awards. A prolific author and editor, he has written more than 200 journal articles and several textbooks and has edited over 75 books.

Monika Sharma, PhD, is working as a Scientist in the Dairy Technology Division at the Southern Regional Station of the ICAR National Dairy Research Institute, Bengaluru, India, and is actively involved in teaching and research activities. She was formerly a scientist at ICAR—Central Institute of Postharvest Engineering & Technology, Ludhiana, Punjab, for more than five years. Dr. Sharma has more than ten years of research experience. She has worked in the area of convenience and ready-to-eat foods, functional foods, quality evaluation, composite dairy foods, starch modification and its application in dairy food products, etc. Presently, she is working in the area of functional and indigenous dairy foods. She has published several research papers in peer-reviewed journals, edited books, technical bulletins, technology inventory books, book chapters, popular articles, and more than 20 conference papers. She has successfully guided six postgraduate students for their dissertation work. She has worked as a principal investigator of several research projects and has developed various technologies, for which she has also conducted entrepreneurship development programs. She has earned several awards, such as an ICAR–JRF award and fellowship, first rank in all India level Agricultural Research Services examination in the discipline of food science and technology, ICAR–NET, conference awards, institute awards, etc. She is a life member of the Indian Science Congress and the Association of Food Scientists and Technologists (India). She received a P[illegible] in Food Science & Technology from Delhi University, New Delhi; an MSc in Food [illegible]nology from Govind Ballabh Pant University of Agriculture and Technology, Pantnagar; and a PhD in Dairy Technology from ICAR-N[illegible]onal Dairy Research Institute (NDRI), Karnal, Haryana, India.