INDIAN JOURNAL OF NATURAL SCIENCES (IJONS)

BIMONTHLY INTERNATIONAL JOURNAL (PRINT)

Editor-in-Chief Dr.S.Vijikumar

Published by

TAMILNADU SCIENTIFIC RESEARCH ORGANISATION

Regd.Off.: NO 46-141, MEENAKSHIPURAM RD, NEAR POST OFFICE, ARIMALAM 622 201, PUDUKKOTTAI, TAMIL NADU, INDIA

Admin. Off.: PLOT NO 39, MURA BHAVAN, KOODAL NAGAR, RAJAGOPALAPURAM POST, PUDUKKOTTAI, TAMIL NADU, INDIA.

<u>ijonstnsro@gmail.com</u>, editorijons@gmail.com-www.tnsroindia.org.in

Editor-in-Chief, Editorial Board and Publisher take no responsibility for inaccurate, misleading data, opinion and statements appeared in the articles and advertisements published in this journal. It is the sole responsibility of the contributors and advertisers. No part of this journal can be reproduced without the written permission of the Editor-in-Chief who also holds the copyright © of the "Indian Journal of Natural Sciences (IJONS)".

JOURNAL PARTICULARS

Journal Name	INDIAN JOURNAL OF NATURAL SCIENCES (IJONS)
Frequency	Bi-monthly (Feb, Apr, Jun, Aug, Oct, Dec)
ISSN	0976 – 0997 (Print)
Publisher	TamilNadu Scientific Research Organisation ,
	Pudukkottai, Tamil Nadu, India
Chief Editor	Dr.S.Vijikumar
Copy right	TamilNadu Scientific Research Organisation (TNSRO)
	Pudukkottai, Tamil Nadu, India.
Starting Year	2010
Subject	Multi DisciplinaryScience Subjects
Review Process	Double Blind Review Process
Language	English
Publication Format	Print
Access	OPERACCESS
License	Creative Commons Attribution License 4.0
Phone Nos:	04322- 458193, 04322 –261088 (10.00 A.M to 05.00 P.M)
Email	ijons@tnsroindia.org.in& ijonstnsro@gmail.com
Website	https://www.tnsroindia.org.in/
Registered office	No 46-141, Meenakshipuram Rd, Near Post Office,
Address	Arimalam 622 201, Pudukkottai, Tamil Nadu, India.
Admin. Office Address	Plot No 39, Mura Bhavan, Koodal Nagar,
	Rajagopalapuram Post, Pudukkottai, Tamil Nadu, India.

Indian Journal of Natural Sciences (IJONS) Editorial Committee Members (ECM)

Editor-in-Chief Director TamiliNadu Scientific Research Organisation Pudukkoltai-622003, Tamil Nadu. India. Editorial Committee Dr. Neelesh Sharma Professor, Sher-E-Kashmir University of Agricultural Sciences and Technology of Jammu (SUKAST), Jammu, University in Wadoora, Jammu & Kashmir Dr.C. Anandharamakrishnan Director, CSIR - National Institute for Interdisciplinary Science and Technology (NIIST) Council of Scientific and Industrial Research (CSIR), Ministry of Science and Technology, Government of India, Industrial Estate PO, Thiruvananthapuram, India Dr.G.G.Hammad Ahmad Shadab Associate Professor, Department of Zoology, Aligarh Muslim University, Aligarh-202002, Uttar Pradesh, India Dr. B. Vaseeharan Professor and Head, Department of Animal Health and Management, Alagappa University, Karaikudi – 630003 TamiliNadu, India Dr. T. S. Saravanan Sr. Professor of Biotechnology, Dr.M. G. R Educational and Research Institute University, Periyar E.V.R High Road, Maduravoyal, Chennai-600095. Dr. K. Gurunathan Prof. & Head, Department of Nano science & Technology, Alagappa University, Karaikudi, TamiliNadu, India. Dr.C.Balusami Assistant Professor, Department of Livestock Production and Management, College of Veterinary and Animal Sciences Pookode-673576 Kerala, India. Dr. Rajashekhar O, Patil Assistant Professor, Department of Environmental Management, Sant Gadge Maharaj College of Commerce & Economics, Mumbai 400004, India Dr.M.Krishnan Vice Chancellor, Central University of Tamil Nadu, Thiruvarur, Tamil Nadu, India		Dr S Viiikumar
TamilNadu Scientific Research Organisation Pudukkottai-622003, Tamil Nadu. India. Editorial Committee Dr.Neelesh Sharma Professor, Sher-E-Kashmir University of Agricultural Sciences and Technology of Jammu (SUKAST), Jammu, University in Wadoora, Jammu & Kashmir Dr.C.Anandharamakrishnan Director, CSIR - National Institute for Interdisciplinary Science and Technology (NIIST) Council of Scientific and Industrial Research (CSIR), Ministry of Science and Technology, Government of India, Industrial Estate PO, Thiruvananthapuram, India Dr.G.G.Hammad Ahmad Shadab Associate Professor, Department of Zoology, Aligarh Muslim University, Aligarh-202002, Ultar Pradesh, India Dr. B. Vaseeharan Professor and Head, Department of Animal Health and Management, Alagappa University, Karaikudi – 630003 TamilNadu, India Dr. T.S. Saravanan Sr. Professor of Biotechnology, Dr.M.G.R Educational and Research Institute University, Periyar E.V.R High Road, Maduravoyal, Chennai-600095. Dr. K.Gurunathan Prof & Head, Department of Nano science & Technology, Alagappa University, Karaikudi, TamilNadu, India. Dr.C.Balusami Assistant Professor, Department of Livestock Production and Management, College of Veterinary and Animal Sciences Pookode-673576. Kerala, India. Dr. Rajashekhar O, Patil Assistant Professor, Department of Environmental Management, Sant Gadge Maharaj College of Commerce & Economics, Mumbai 400004, India Professor, Department of Mathematics, Adikavi Nannaya University, Rajahmundry-533105, Andhra Pradesh, India Dr.M.Krishnan Vice Chancellor, Central University of Tamil Nadu,		-
Pudukkottai-622003, Tamil Nadu. India. Editorial Committee Dr.Neelesh Sharma Professor. Sher-E-Kashmir University of Agricultural Sciences and Technology of Jammu (SUKAST), Jammu, University in Wadoora, Jammu & Kashmir Dr.C.Anandharamakrishnan Director, CSIR - National Institute for Interdisciplinary Science and Technology (NIIST) Council of Scientific and Industrial Research (CSIR), Ministry of Science and Technology, Government of India, Industrial Estate PO, Thiruvananthapuram, India Dr.G.G.Hammad Ahmad Shadab Associate Professor, Department of Zoology, Aligarh Muslim University, Aligarh-202002, Uttar Pradesh, India Dr. B. Vaseeharan Professor and Head, Department of Animal Health and Management, Alagappa University, Karaikudi – 630003 TamilNadu, India Dr. T.S. Saravanan Sr.Professor of Biotechnology, Dr.M.G.R Educational and Research Institute University, Periyar E.V.R High Road, Maduravoyal, Chennai-600095. Dr. K.Gurunathan Prof & Head, Department of Nano science & Technology, Alagappa University, Karaikudi, TamilNadu, India. Dr.C.Balusami Assistant Professor, Department of Livestock Production and Management, College of Veterinary and Animal Sciences Pookode-673576.Kerala, India. Dr. Rajashekhar O, Patil Assistant Professor, Department of Environmental Management, Sant Gadge Maharaj College of Commerce & Economics, Mumbai 400004, India Professor, Department of Mathematics, Adikavi Nannaya University, Rajahmundry-533105, Andhra Pradesh, India Dr.M.Krishnan Vice Chancellor, Central University of Tamil Nadu,	Editor-in-Chief	
Honorable Chief Advisor Honorable Chief Advisor Brite-Kashmir University of Agricultural Sciences and Technology of Jammu (SUKAST), Jammu, University in Wadoora, Jammu & Kashmir Dr.C.Anandharamakrishnan Director, CSIR - National Institute for Interdisciplinary Science and Technology (NIIST) Council of Scientific and Industrial Research (CSIR), Ministry of Science and Technology, Government of India, Industrial Estate PO, Thiruvananthapuram, India Dr.G.G.Hammad Ahmad Shadab Associate Professor, Department of Zoology, Aligarh Muslim University, Aligarh-202002, Uttar Pradesh, India Dr. B. Vaseeharan Professor and Head, Department of Animal Health and Management, Alagappa University, Karaikudi – 630003 TamilNadu, India Dr. T.S. Saravanan Sr. Professor of Biotechnology, Dr.M.G.R Educational and Research Institute University, Periyar E.V.R High Road, Maduravoyal, Chennai-600095. Dr. K.Gurunathan Prof. & Head, Department of Nano science & Technology, Alagappa University, Karaikudi, TamilNadu, India. Dr.C.Balusami Assistant Professor, Department of Livestock Production and Management, College of Veterinary and Animal Sciences Pookode-673576.Kerala, India. Dr. Rajashekhar O, Patil Assistant Professor, Department of Environmental Management, Sant Gadge Maharaj College of Commerce & Economics, Mumbai 400004, India Professor, Gepartment of Mathematics, Adikavi Nannaya University, Rajahmundry-533105, Andhra Pradesh, India Dr.M.Krishnan Vice Chancellor, Central University of Tamil Nadu,		
Professor, Sher-E-Kashmir University of Agricultural Sciences and Technology of Jammu (SUKAST), Jammu, University in Wadoora, Jammu & Kashmir Dr.C.Anandharamakrishnan Director, CSIR - National Institute for Interdisciplinary Science and Technology (NIIST) Council of Scientific and Industrial Research (CSIR), Ministry of Science and Technology, Government of India, Industrial Estate PO, Thiruvananthapuram, India Dr.G.Hammad Ahmad Shadab Associate Professor, Department of Zoology, Aligarh Muslim University, Aligarh-202002,Uttar Pradesh, India Dr. B. Vaseeharan Professor and Head, Department of Animal Health and Management, Alagappa University, Karaikudi – 630003 TamilNadu, India Dr. T.S. Saravanan Por Science		Editorial Committee
Honorable Chief Advisor Sher-E-Kashmir University of Agricultural Sciences and Technology of Jammu (SUKAST), Jammu, University in Wadoora, Jammu & Kashmir Dr.C.Anandharamakrishnan Director, CSIR - National Institute for Interdisciplinary Science and Technology (NIIST) Council of Scientific and Industrial Research (CSIR), Ministry of Science and Technology, Government of India, Industrial Estate PO, Thiruvananthapuram, India Dr.G.G.Hammad Ahmad Shadab Associate Professor, Department of Zoology, Aligarh Muslim University, Aligarh-202002, Uttar Pradesh, India Dr. B. Vaseeharan Professor and Head, Department of Animal Health and Management, Alagappa University, Karaikudi – 630003 TamilNadu, India Dr. T.S. Saravanan Sr. Professor of Biotechnology, Dr.M.G.R Educational and Research Institute University, Periyar E.V.R High Road, Maduravoyal, Chennai-600095. Dr. K.Gurunathan Prof & Head, Department of Nano science & Technology, Alagappa University, Karaikudi, TamilNadu, India. Dr.C.Balusami Assistant Professor, Department of Livestock Production and Management, College of Veterinary and Animal Sciences Pookode-673576.Kerala, India. Dr. Rajashekhar O, Patil Assistant Professor, Department of Environmental Management, Sant Gadge Maharaj College of Commerce & Economics, Mumbai 400004, India Professor, Department of Mathematics, Adikavi Nannaya University, Rajahmundry-533105, Andhra Pradesh, India Dr.M.Krishnan Vice Chancellor, Central University of Tamil Nadu,		Dr.Neelesh Sharma
Technology of Jammu (SUKAST), Jammu, University in Wadoora, Jammu & Kashmir Dr.C.Anandharamakrishnan Director, CSIR - National Institute for Interdisciplinary Science and Technology (NIIST) Council of Scientific and Industrial Research (CSIR), Ministry of Science and Technology, Government of India, Industrial Estate PO, Thiruvananthapuram, India Dr.G.G.Hammad Ahmad Shadab Associate Professor, Department of Zoology, Aligarh Muslim University, Aligarh-202002, Ultar Pradesh, India Dr. B. Vaseeharan Professor and Head, Department of Animal Health and Management, Alagappa University, Karaikudi – 630003 TamilNadu, India Dr. T.S. Saravanan Sr.Professor of Biotechnology, Dr. M.G.R Educational and Research Institute University, Periyar E.V.R High Road, Maduravoyal, Chennai-600095. Dr. K. Gurunathan Prof. & Head, Department of Nano science & Technology, Alagappa University, Karaikudi, TamilNadu, India. Dr. C. Balusami Assistant Professor, Department of Livestock Production and Management, College of Veterinary and Animal Sciences Pookode-673576. Kerala, India. Dr. Rajashekhar O, Patil Assistant Professor, Department of Environmental Management, Sant Gadge Maharaj College of Commerce & Economics, Mumbai 400004, India Professor, Department of Mathematics, Adikavi Nannaya University, Rajahmundry-533105, Andhra Pradesh, India Dr.M.Krishnan Vice Chancellor, Central University of Tamil Nadu,		·
Honorable Chief Advisor Dr. C. Anandharamakrishnan Director, CSIR - National Institute for Interdisciplinary Science and Technology (NIIST) Council of Scientific and Industrial Research (CSIR), Ministry of Science and Technology, Government of India, Industrial Estate PO, Thiruvananthapuram, India Dr. G. Hammad Ahmad Shadab Associate Professor, Department of Zoology, Aligarh Muslim University, Aligarh-202002, Uttar Pradesh, India Dr. B. Vaseeharan Professor and Head, Department of Animal Health and Management, Alagappa University, Karaikudi – 630003 TamilNadu, India Dr. T.S. Saravanan Sr. Professor of Biotechnology, Dr. M. G. R. Educational and Research Institute University, Periyar E.V. R. High Road, Maduravoyal, Chennai-600095. Dr. K. Gurunathan Prof. & Head, Department of Nano science & Technology, Alagappa University, Karaikudi, TamilNadu, India. Dr. C.Balusami Assistant Professor, Department of Livestock Production and Management, College of Veterinary and Animal Sciences Pookode-673576. Kerala, India. Dr. Rajashekhar O, Patil Assistant Professor, Department of Environmental Management, Sant Gadge Maharaj College of Commerce & Economics, Mumbai 400004, India Professor, Department of Mathematics, Adikavi Nannaya University, Rajahmundry-533105, Andhra Pradesh, India Dr. M. Krishnan Vice Chancellor, Central University of Tamil Nadu,	Honorable Chief Advisor	3 0
Honorable Chief Advisor Honorable Chief Advisor Dr.C.Anandharamakrishnan Director, CSIR - National Institute for Interdisciplinary Science and Technology (NIIST) Council of Scientific and Industrial Research (CSIR), Ministry of Science and Technology, Government of India, Industrial Estate PO, Thiruvananthapuram, India Dr.G.G.Hammad Ahmad Shadab Associate Professor, Department of Zoology, Aligarh Muslim University, Aligarh-202002, Uttar Pradesh, India Dr. B. Vaseeharan Professor and Head, Department of Animal Health and Management, Alagappa University, Karaikudi – 630003 TamilNadu, India Dr. T.S. Saravanan Sr.Professor of Biotechnology, Dr.M.G.R Educational and Research Institute University, Periyar E.V.R High Road, Maduravoyal, Chennai-600095. Dr. K.Gurunathan Prof & Head, Department of Nano science & Technology, Alagappa University, Karaikudi, TamilNadu, India. Dr.C.Balusami Assistant Professor, Department of Livestock Production and Management, College of Veterinary and Animal Sciences Pookode-673576.Kerala, India. Dr. Rajashekhar O, Patil Assistant Professor, Department of Environmental Management, Sant Gadge Maharaj College of Commerce & Economics, Mumbai 400004, India Professor, Department of Mathematics, Adikavi Nannaya University, Rajahmundry-533105, Andhra Pradesh, India Dr.M.Krishnan Vice Chancellor, Central University of Tamil Nadu,		3
Honorable Chief Advisor Director, CSIR - National Institute for Interdisciplinary Science and Technology (NIIST) Council of Scientific and Industrial Research (CSIR), Ministry of Science and Technology, Government of India, Industrial Estate PO, Thiruvananthapuram, India Dr. G.G.Hammad Ahmad Shadab Associate Professor, Department of Zoology, Aligarh Muslim University, Aligarh-202002, Uttar Pradesh, India Dr. B. Vaseeharan Professor and Head, Department of Animal Health and Management, Alagappa University, Karaikudi – 630003 TamilNadu, India Dr. T.S. Saravanan Sr.Professor of Biotechnology, Dr.M.G.R Educational and Research Institute University, Periyar E.V.R High Road, Maduravoyal, Chennai-600095. Dr. K. Gurunathan Prof & Head, Department of Nano science & Technology, Alagappa University, Karaikudi, TamilNadu, India. Dr. C.Balusami Assistant Professor, Department of Livestock Production and Management, College of Veterinary and Animal Sciences Pookode-673576. Kerala, India. Dr. Rajashekhar O, Patil Assistant Professor, Department of Environmental Management, Sant Gadge Maharaj College of Commerce & Economics, Mumbai 400004, India Professor, Department of Mathematics, Adikavi Nannaya University, Rajahmundry-533105, Andhra Pradesh, India Dr. M.Krishnan Vice Chancellor, Central University of Tamil Nadu,		Va.,, Ca. (1.45),
Technology (NIIST) Council of Scientific and Industrial Research (CSIR), Ministry of Science and Technology, Government of India, Industrial Estate PO, Thiruvananthapuram, India Dr.G.G.Hammad Ahmad Shadab Associate Professor, Department of Zoology, Aligarh Muslim University, Aligarh-202002, Uttar Pradesh, India Dr. B. Vaseeharan Professor and Head, Department of Animal Health and Management, Alagappa University, Karaikudi – 630003 TamilNadu, India Dr. T.S. Saravanan Sr. Professor of Biotechnology, Dr.M.G.R Educational and Research Institute University, Periyar E.V.R High Road, Maduravoyal, Chennai-600095. Dr. K.Gurunathan Prof & Head, Department of Nano science & Technology, Alagappa University, Karaikudi, TamilNadu, India. Dr.C.Balusami Assistant Professor, Department of Livestock Production and Management, College of Veterinary and Animal Sciences Pookode-673576.Kerala, India. Dr. Rajashekhar O, Patil Assistant Professor, Department of Environmental Management, Sant Gadge Maharaj College of Commerce & Economics, Mumbai 40004, India Professor.G.Ganesan Professor, Department of Mathematics, Adikavi Nannaya University, Rajahmundry-533105, Andhra Pradesh, India Dr.M.Krishnan Vice Chancellor, Central University of Tamil Nadu,		
Technology (NIIST) Council of Scientific and Industrial Research (CSIR), Ministry of Science and Technology, Government of India, Industrial Estate PO, Thiruvananthapuram, India Dr.G.G.Hammad Ahmad Shadab Associate Professor, Department of Zoology, Aligarh Muslim University, Aligarh-202002, Uttar Pradesh, India Dr. B. Vaseeharan Professor and Head, Department of Animal Health and Management, Alagappa University, Karaikudi – 630003 TamilNadu, India Dr. T.S. Saravanan Sr.Professor of Biotechnology, Dr.M.G.R Educational and Research Institute University, Periyar E.V.R High Road, Maduravoyal, Chennai-600095. Dr. K.Gurunathan Prof & Head, Department of Nano science & Technology, Alagappa University, Karaikudi, TamilNadu, India. Dr.C.Balusami Assistant Professor, Department of Livestock Production and Management, College of Veterinary and Animal Sciences Pookode-673576.Kerala, India. Dr. Rajashekhar O, Patil Assistant Professor, Department of Environmental Management, Sant Gadge Maharaj College of Commerce & Economics, Mumbai 400004, India Professor.G.Ganesan Professor, Department of Mathematics, Adikavi Nannaya University, Rajahmundry-533105, Andhra Pradesh, India Dr.M.Krishnan Vice Chancellor, Central University of Tamil Nadu,	Llanamakia Chiaf Advisan	CSIR - National Institute for Interdisciplinary Science and
Industrial Estate PO, Thiruvananthapuram, India Dr.G.G.Hammad Ahmad Shadab Associate Professor, Department of Zoology, Aligarh Muslim University, Aligarh-202002,Uttar Pradesh, India Dr. B. Vaseeharan Professor and Head, Department of Animal Health and Management, Alagappa University, Karaikudi – 630003 TamilNadu, India Dr. T.S. Saravanan Sr. Professor of Biotechnology, Dr. M.G.R Educational and Research Institute University, Periyar E.V.R High Road, Maduravoyal,Chennai-600095. Dr. K.Gurunathan Prof & Head, Department of Nano science & Technology, Alagappa University, Karaikudi, TamilNadu, India. Dr.C.Balusami Assistant Professor, Department of Livestock Production and Management, College of Veterinary and Animal Sciences Pookode-673576.Kerala, India. Dr. Rajashekhar O, Patil Assistant Professor, Department of Environmental Management, Sant Gadge Maharaj College of Commerce & Economics, Mumbai 400004, India Professor.G.Ganesan Professor, Department of Mathematics, Adikavi Nannaya University,Rajahmundry-533105, Andhra Pradesh, India Dr.M.Krishnan Vice Chancellor, Central University of Tamil Nadu,	Honorable Chief Advisor	Technology (NIIST) Council of Scientific and Industrial Research
Honorable Chief Advisor Por.G.G.Hammad Ahmad Shadab Associate Professor, Department of Zoology, Aligarh Muslim University, Aligarh-202002,Uttar Pradesh, India Dr. B. Vaseeharan Professor and Head, Department of Animal Health and Management, Alagappa University, Karaikudi – 630003 TamilNadu, India Dr. T.S. Saravanan Sr.Professor of Biotechnology, Dr.M.G.R Educational and Research Institute University, Periyar E.V.R High Road, Maduravoyal,Chennai-600095. Dr. K.Gurunathan Prof & Head, Department of Nano science & Technology, Alagappa University, Karaikudi, TamilNadu, India. Dr.C.Balusami Assistant Professor, Department of Livestock Production and Management, College of Veterinary and Animal Sciences Pookode-673576.Kerala, India. Dr. Rajashekhar O, Patil Assistant Professor, Department of Environmental Management, Sant Gadge Maharaj College of Commerce & Economics, Mumbai 400004, India Professor.G.Ganesan Professor, Department of Mathematics, Adikavi Nannaya University,Rajahmundry-533105, Andhra Pradesh, India Dr.M.Krishnan Vice Chancellor, Central University of Tamil Nadu,		
Honorable Chief Advisor Associate Professor, Department of Zoology, Aligarh Muslim University, Aligarh-202002,Uttar Pradesh, India Dr. B. Vaseeharan Professor and Head, Department of Animal Health and Management, Alagappa University, Karaikudi – 630003 TamilNadu, India Dr. T.S. Saravanan Sr.Professor of Biotechnology, Dr.M.G.R Educational and Research Institute University, Periyar E.V.R High Road, Maduravoyal,Chennai-600095. Dr. K.Gurunathan Prof & Head, Department of Nano science & Technology, Alagappa University, Karaikudi, TamilNadu, India. Dr.C.Balusami Assistant Professor, Department of Livestock Production and Management, College of Veterinary and Animal Sciences Pookode-673576.Kerala, India. Dr. Rajashekhar O, Patil Assistant Professor, Department of Environmental Management, Sant Gadge Maharaj College of Commerce & Economics, Mumbai 400004, India Professor, Department of Mathematics, Adikavi Nannaya University,Rajahmundry-533105, Andhra Pradesh, India Dr.M.Krishnan Vice Chancellor, Central University of Tamil Nadu,		
Aligarh Muslim University, Aligarh-202002,Uttar Pradesh, India Dr. B. Vaseeharan Professor and Head, Department of Animal Health and Management, Alagappa University, Karaikudi – 630003 TamilNadu, India Dr. T.S. Saravanan Sr. Professor of Biotechnology, Dr. M.G.R Educational and Research Institute University, Periyar E.V.R High Road, Maduravoyal,Chennai-600095. Dr. K.Gurunathan Prof & Head, Department of Nano science & Technology, Alagappa University, Karaikudi, TamilNadu, India. Dr. C.Balusami Assistant Professor, Department of Livestock Production and Management, College of Veterinary and Animal Sciences Pookode-673576.Kerala, India. Dr. Rajashekhar O, Patil Assistant Professor, Department of Environmental Management, Sant Gadge Maharaj College of Commerce & Economics, Mumbai 400004, India Professor.G.Ganesan Professor, Department of Mathematics, Adikavi Nannaya University, Rajahmundry-533105, Andhra Pradesh, India Dr.M.Krishnan Vice Chancellor, Central University of Tamil Nadu,	Hanarahla Chiaf Advisor	
Honorable Chief Advisor Professor and Head, Department of Animal Health and Management, Alagappa University, Karaikudi – 630003 TamilNadu, India Dr. T.S. Saravanan Sr.Professor of Biotechnology, Dr.M.G.R Educational and Research Institute University, Periyar E.V.R High Road, Maduravoyal, Chennai-600095. Dr. K.Gurunathan Prof & Head, Department of Nano science & Technology, Alagappa University, Karaikudi, TamilNadu, India. Dr.C.Balusami Assistant Professor, Department of Livestock Production and Management, College of Veterinary and Animal Sciences Pookode-673576.Kerala, India. Dr. Rajashekhar O, Patil Assistant Professor, Department of Environmental Management, Sant Gadge Maharaj College of Commerce & Economics, Mumbai 400004, India Professor, Department of Mathematics, Adikavi Nannaya University, Rajahmundry-533105, Andhra Pradesh, India Dr.M.Krishnan Vice Chancellor, Central University of Tamil Nadu,	Tionorable Chief Advisor	·
Honorable Chief Advisor Management, Alagappa University, Karaikudi – 630003 TamilNadu, India Dr. T.S. Saravanan Sr.Professor of Biotechnology, Dr.M.G.R Educational and Research Institute University, Periyar E.V.R High Road, Maduravoyal, Chennai-600095. Dr. K.Gurunathan Prof & Head, Department of Nano science & Technology, Alagappa University, Karaikudi, TamilNadu, India. Dr.C.Balusami Assistant Professor, Department of Livestock Production and Management, College of Veterinary and Animal Sciences Pookode-673576.Kerala, India. Dr. Rajashekhar O, Patil Assistant Professor, Department of Environmental Management, Sant Gadge Maharaj College of Commerce & Economics, Mumbai 400004, India Professor.G.Ganesan Professor, Department of Mathematics, Adikavi Nannaya University,Rajahmundry-533105, Andhra Pradesh, India Dr.M.Krishnan Vice Chancellor, Central University of Tamil Nadu,		
Management, Alagappa University, Karaikudi – 630003 TamilNadu, India Dr. T.S. Saravanan Sr.Professor of Biotechnology, Dr.M.G.R Educational and Research Institute University, Periyar E.V.R High Road, Maduravoyal, Chennai-600095. Dr. K.Gurunathan Prof & Head, Department of Nano science & Technology, Alagappa University, Karaikudi, TamilNadu, India. Dr.C.Balusami Assistant Professor, Department of Livestock Production and Management, College of Veterinary and Animal Sciences Pookode-673576.Kerala, India. Dr. Rajashekhar O, Patil Assistant Professor, Department of Environmental Management, Sant Gadge Maharaj College of Commerce & Economics, Mumbai 400004, India Professor.G.Ganesan Professor, Department of Mathematics, Adikavi Nannaya University,Rajahmundry-533105, Andhra Pradesh, India Dr.M.Krishnan Vice Chancellor, Central University of Tamil Nadu,	Lieuwanakia Obias Aakainan	Professor and Head, Department of Animal Health and
Honorable Member Dr. T.S. Saravanan Sr.Professor of Biotechnology, Dr.M.G.R Educational and Research Institute University, Periyar E.V.R High Road, Maduravoyal, Chennai-600095. Dr. K.Gurunathan Prof & Head, Department of Nano science & Technology, Alagappa University, Karaikudi, TamilNadu, India. Dr.C.Balusami Assistant Professor, Department of Livestock Production and Management, College of Veterinary and Animal Sciences Pookode-673576.Kerala, India. Dr. Rajashekhar O, Patil Assistant Professor, Department of Environmental Management, Sant Gadge Maharaj College of Commerce & Economics, Mumbai 40004, India Professor.G.Ganesan Professor, Department of Mathematics, Adikavi Nannaya University,Rajahmundry-533105, Andhra Pradesh, India Dr.M.Krishnan Vice Chancellor, Central University of Tamil Nadu,	Honorable Chief Advisor	
Honorable Member Sr.Professor of Biotechnology, Dr.M.G.R Educational and Research Institute University, Periyar E.V.R High Road, Maduravoyal, Chennai-600095. Dr. K.Gurunathan Prof & Head, Department of Nano science & Technology, Alagappa University, Karaikudi, TamilNadu, India. Dr.C.Balusami Assistant Professor, Department of Livestock Production and Management, College of Veterinary and Animal Sciences Pookode-673576.Kerala, India. Dr. Rajashekhar O, Patil Assistant Professor, Department of Environmental Management, Sant Gadge Maharaj College of Commerce & Economics, Mumbai 400004, India Professor.G.Ganesan Professor, Department of Mathematics, Adikavi Nannaya University, Rajahmundry-533105, Andhra Pradesh, India Dr.M.Krishnan Vice Chancellor, Central University of Tamil Nadu,		
Honorable Member Dr. M.G.R Educational and Research Institute University, Periyar E.V.R High Road, Maduravoyal, Chennai-600095. Dr. K.Gurunathan Prof & Head, Department of Nano science & Technology, Alagappa University, Karaikudi, TamilNadu, India. Dr. C.Balusami Assistant Professor, Department of Livestock Production and Management, College of Veterinary and Animal Sciences Pookode-673576.Kerala, India. Dr. Rajashekhar O, Patil Assistant Professor, Department of Environmental Management, Sant Gadge Maharaj College of Commerce & Economics, Mumbai 400004, India Professor.G.Ganesan Professor, Department of Mathematics, Adikavi Nannaya University, Rajahmundry-533105, Andhra Pradesh, India Dr.M.Krishnan Vice Chancellor, Central University of Tamil Nadu,		
Periyar E.V.R High Road, Maduravoyal, Chennai-600095. Dr. K.Gurunathan Prof & Head, Department of Nano science & Technology, Alagappa University, Karaikudi, TamilNadu, India. Dr.C.Balusami Assistant Professor, Department of Livestock Production and Management, College of Veterinary and Animal Sciences Pookode-673576.Kerala, India. Dr. Rajashekhar O, Patil Assistant Professor, Department of Environmental Management, Sant Gadge Maharaj College of Commerce & Economics, Mumbai 400004, India Professor.G.Ganesan Professor, Department of Mathematics, Adikavi Nannaya University,Rajahmundry-533105, Andhra Pradesh, India Dr.M.Krishnan Vice Chancellor, Central University of Tamil Nadu,	Honorable Member	
Honorable Member Dr. K.Gurunathan Prof & Head, Department of Nano science & Technology, Alagappa University, Karaikudi, TamilNadu, India. Dr.C.Balusami Assistant Professor, Department of Livestock Production and Management, College of Veterinary and Animal Sciences Pookode-673576.Kerala, India. Dr. Rajashekhar O, Patil Assistant Professor, Department of Environmental Management, Sant Gadge Maharaj College of Commerce & Economics, Mumbai 400004, India Professor.G.Ganesan Professor, Department of Mathematics, Adikavi Nannaya University, Rajahmundry-533105, Andhra Pradesh, India Dr.M.Krishnan Vice Chancellor, Central University of Tamil Nadu,		3
Alagappa University, Karaikudi, TamilNadu, India. Dr.C.Balusami Assistant Professor, Department of Livestock Production and Management, College of Veterinary and Animal Sciences Pookode-673576.Kerala, India. Dr. Rajashekhar O, Patil Assistant Professor, Department of Environmental Management, Sant Gadge Maharaj College of Commerce & Economics, Mumbai 400004, India Professor.G.Ganesan Professor, Department of Mathematics, Adikavi Nannaya University,Rajahmundry-533105, Andhra Pradesh, India Dr.M.Krishnan Vice Chancellor, Central University of Tamil Nadu,		
Honorable Member Dr. C.Balusami Assistant Professor, Department of Livestock Production and Management, College of Veterinary and Animal Sciences Pookode-673576.Kerala, India. Dr. Rajashekhar O, Patil Assistant Professor, Department of Environmental Management, Sant Gadge Maharaj College of Commerce & Economics, Mumbai 400004, India Professor.G.Ganesan Professor, Department of Mathematics, Adikavi Nannaya University,Rajahmundry-533105, Andhra Pradesh, India Dr.M.Krishnan Vice Chancellor, Central University of Tamil Nadu,	Honorable Member	Prof & Head, Department of Nano science & Technology,
Honorable Member Assistant Professor, Department of Livestock Production and Management, College of Veterinary and Animal Sciences Pookode-673576.Kerala, India. Dr. Rajashekhar O, Patil Assistant Professor, Department of Environmental Management, Sant Gadge Maharaj College of Commerce & Economics, Mumbai 400004, India Professor.G.Ganesan Professor, Department of Mathematics, Adikavi Nannaya University,Rajahmundry-533105, Andhra Pradesh, India Dr.M.Krishnan Vice Chancellor, Central University of Tamil Nadu,		Alagappa University, Karaikudi, TamilNadu, India.
Honorable Member Management, College of Veterinary and Animal Sciences Pookode-673576.Kerala, India. Dr. Rajashekhar O, Patil Assistant Professor, Department of Environmental Management, Sant Gadge Maharaj College of Commerce & Economics, Mumbai 400004, India Professor.G.Ganesan Professor, Department of Mathematics, Adikavi Nannaya University,Rajahmundry-533105, Andhra Pradesh, India Dr.M.Krishnan Vice Chancellor, Central University of Tamil Nadu,		211012414041111
Pookode-673576.Kerala, India. Dr. Rajashekhar O, Patil Assistant Professor, Department of Environmental Management, Sant Gadge Maharaj College of Commerce & Economics, Mumbai 400004, India Professor.G.Ganesan Professor, Department of Mathematics, Adikavi Nannaya University,Rajahmundry-533105, Andhra Pradesh, India Dr.M.Krishnan Vice Chancellor, Central University of Tamil Nadu,	Honorable Member	·
Honorable Member Dr. Rajashekhar O, Patil Assistant Professor, Department of Environmental Management, Sant Gadge Maharaj College of Commerce & Economics, Mumbai 400004, India Professor.G.Ganesan Professor, Department of Mathematics, Adikavi Nannaya University,Rajahmundry-533105, Andhra Pradesh, India Dr.M.Krishnan Vice Chancellor, Central University of Tamil Nadu,		
Honorable Member Assistant Professor, Department of Environmental Management, Sant Gadge Maharaj College of Commerce & Economics, Mumbai 400004, India Professor.G.Ganesan Professor, Department of Mathematics, Adikavi Nannaya University,Rajahmundry-533105, Andhra Pradesh, India Dr.M.Krishnan Vice Chancellor, Central University of Tamil Nadu,		
Sant Gadge Maharaj College of Commerce & Economics, Mumbai 400004, India Professor.G.Ganesan Professor, Department of Mathematics, Adikavi Nannaya University,Rajahmundry-533105, Andhra Pradesh, India Dr.M.Krishnan Honorable Member Vice Chancellor, Central University of Tamil Nadu,	Llanarable Marshar	·
Honorable Member Professor.G.Ganesan Professor, Department of Mathematics, Adikavi Nannaya University,Rajahmundry-533105, Andhra Pradesh, India Dr.M.Krishnan Vice Chancellor, Central University of Tamil Nadu,	monorable iviember	Sant Gadge Maharaj College of Commerce & Economics, Mumbai
Honorable Member Professor, Department of Mathematics, Adikavi Nannaya University,Rajahmundry-533105, Andhra Pradesh, India Dr.M.Krishnan Honorable Member Vice Chancellor, Central University of Tamil Nadu,		·
University,Rajahmundry-533105, Andhra Pradesh, India Dr.M.Krishnan Honorable Member Vice Chancellor, Central University of Tamil Nadu,	Llamanahla Massali ass	
Dr.M.Krishnan Honorable Member Vice Chancellor, Central University of Tamil Nadu,	Honorable iviember	·
Honorable Member Vice Chancellor, Central University of Tamil Nadu,		
·	Honorable Member	
		·

Honorable Member	Mis D.Kalpana Asst.Professor, Department of Chemistry, Bon Secours College for Women, Vilar bypass road, Thanjavur TamilNadu, India.
Honorable Member	Dr.H.Syed Jahangir Associate Professor, P.G. and Research Department of Botany, Jamal Mohamed College (Autonomous) Trichirappalli-620020, TamilNadu, India.
Honorable Member	Dr.Sujatha Ilangovan Assistant Professor, PG & Research Department of Zoology, Holy Cross College, Tiruchirapalli-620002. TamilNadu, India.
Honorable Member	Dr. Vasudevan Ayyappan, Post Doctoral Research Associate, Department of Biotechnology, Delaware State University, Dover, Delaware – 19901
Honorable Member	Prof.K.Kumarasamy Emeritus Professor, ICSSR-Senior Fellow Department of Geography, School of Earth Sciences Bharathidasan University Tiruchirappalli - 620 024, TN, INDIA
Honorable Member	Dr. S. Balasubramanian Assistant Professor, Department of Mathematics, Government Arts College (A), Karur – 639 005, Tamilnadu, India.
Honorable Member	Dr.R.Muthukrishnan Associate Professor (SS&AC) & HOD (Crop Management) Department of Soil Science and Agricultural Chemistry, Vanavarayar Institute of Agricultural Manakkadavu, Pollachi-642- 103, TamilNadu, India
Honorable Member	Dr.Subbiah poopathi Scientist-G/ Director Grade ICMR-Vector control Research Centre, Medical complex, Indira Nagar,Pondicherry-605006,India
Honorable Member	Dr.P.Govindaraj Head & Associate Professor in Chemistry Department of Chemistry, SBK College, Aruppukottai - 626 101, TamilNadu, India
Honorable Member	Dr.Sindhu. K Assistant Professor, Department of Veterinary Pharmacology and Toxicology Veterinary College, Gadag – 582101, Karnataka, India.
Honorable Member	Dr. S. Umamaheswari Assistant Professor, Department of Environmental Biotechnology School of Environmental Sciences Bharathidasan University, Tiruchirappalli – 620 024, Tamil Nadu
Honorable Member	Dr. P. Santhanam Associate Professor, Department of Marine Science, School of Marine Sciences, Bharathidasan University, Tiruchirappalli. Tamil Nadu. India

Honorable Member	Dr. S. Jayachandran Professor & Head, Dept. of Oral Medicine and Radiology, Tamil Nadu Govt. Dental College and Hospital, Chennai -600003, Tamil Nadu, India.
Honorable Member	Dr. Komalavalli Narayanaswamy Associate Professor and Head , PG and Research Department of Botany, Alagappa College of Arts & Science, Karaikudi, Tamil Nadu, India
Honorable Member	Dr.V.M. Srinivasan Assistant Professor (Plant Pathology) Department of Crop Protection Thanthai Roever Institute of Agriculture and Rural Development, Valikandapuram Post, Perambalur - 621115., Tamil Nadu.
Honorable Member	Dr. Rina Poonia Associate Professor, Department of Arts, Faculty of Arts & Law, Manipal University, Jaipur, India.
Honorable Member	Dr.M.Shanthasheela Professor Department of Agricultural Extension and Rural Sociology Tamil Nadu Agricultural University, Lawley Road Coimbatore, Tamil Nadu, India - 641003
Honorable Member	Dr. M. Lekeshmanaswamy Principal, PG and Research Department of Zoology, Kongunadu Arts and Science College G.N. mills (PO), Coimbatore-641 029, TamilNadu, India.
Honorable Member	Dr. N. Balakrishnan Professor, Directorate of Research Tamil Nadu Agricultural University, Lawley Road, Coimbatore, Tamil Nadu, India - 641003.
Honorable Member	Dr.Syed Mohamed Asst. Prof. Dept. of Zoology, Jamal Mohamed College Tiruchirappalli, TamilNadu, India
Honorable Member	Dr.N.Raman Associate Professor, Department of Chemistry, VHNSN College, Virudhunagar-626 001, TamilNadu, India.
Honorable Member	Dr.Komal Kumar Javarappa Institute of Molecular Medicine Finland, University of Helsinki, Finland, Biomedicum Helsinki 2U, G315b, Finland- 00014.
Honorable Member	Dr.A.Dinakara Rao Professor, Center for Bioinformatics, School of Life Sciences, Pondicherry University, Puducherry, India

Honorable Member	Dr.K.Sivakumar Professor, Department of Botany, Annamalai University, Annamalai Nagar, TamilNadu, India
Honorable Member	Dr.A.Kalyana Sundaram Associate Professor(Entomology), Tamil Nadu Agricultural University, Lawley Road Coimbatore, Tamil Nadu, - 641003.
Honorable Member	Dr.P.Ramachandran Director & Head, Trichy Institute of Regenerative Medicine, Thillai Nagar West,Trichy,TamilNadu, India.
Honorable Member	Dr.S.Senthil Murugan Assistant Professor, Department of Animal Nutrition, College of Veterinary and Animal Sciences, Pookode, Wayanad, Kerala, India
Honorable Member	Dr.V.Violet Dhayabaran Associate Professor ,Department of Chemistry, Bishop Heber College (Autonomous), Puthur, Tiruchirappalli, Tamil Nadu, India.
Honorable Member	Dr.Ananthnag B Lecturer, Department of Environmental Science, Kuvempu University, Shivamogga, Karnataka, India.
Honorable Member	Dr.G. Rubalakshmi Scientist & Director, GRD Bio Research Centre #3/41, Nanbargal Nagar, Muthukalipatty, Rasipuram TK, Namakkal DT- 37401. T.N., India.
Honorable Member	Dr.M.Ramesh Professor, Department of Biotechnology, Alagappa University, Karaikudi-630003,Sivagangai Dt, TamilNadu,India.
Honorable Member	Dr.S.Ezhil Vendan, Scientist, Food Protect ants & Infestation Control Department, CSIR-Central Food Technological Research Institute, Mysore-570 020, Karnataka, India.
Honorable Member	Dr.S.Yamini Sudha Lakshmi Assistant Professor, Department of Medical Biochemistry, University of Madras, Taramani Campus, Chennai-600113, TamilNadu, India.

Honorable Member	Dr.V.L.Madhu Prasad Directorate of Extension, University of Agricultural Science, Hebbal,Bangaluru-560024. Karnataka,India.
Honorable Member	Dr.T.Shanmugasundaram Department of Vegetable Crops, Horticultural College and Research Institute, Tamil Nadu Agricultural University, Coimbatore-641 003, Tamil Nadu,India.
Honorable Member	Dr.C.Thamaraiselvi Assistant Professor, Dept. of Biotechnology Mother Teresa Women's University Kodaikanal-624101,TamilNadu,India.
Honorable Member	Dr.R.Selvaraj Department of Veterinary Physiology, Centre for Laboratory Animal Technology & Research (CPCSEA approved), Sathyabama University, Chennai – 600 119.
Honorable Member	Dr. Hasan S.A. Jawad Animal Production Department, Agricultural Faculty, University of Baghdad, Baghdad, Iraq.
Honorable Member	Dr.C.Kathirvelan Assistant Professor, Department of Animal Nutrition Veterinary College and Research Institute, Tamil Nadu Veterinary and Animal Sciences University, Namakkal -637002. TamilNadu, India.
Honorable Member	Dr. John Abraham Assistant Professor, Department of L.P.M.,College of Veterinary and Animal Sciences, Pookode, Wayanad. 673576, Kerala, India
Honorable Member	Dr.P.Kavitha Assistant Professor, Department of Zoology and Biotechnology AVVM Sri Pushpam College (Autonomous) Poondi,Thanjavur, TamilNadu, India.
Honorable Member	Dr. Gopal Muthu Scientist -'C', DHR-Model Rural Health Research Unit ICMR-National Institute of Epidemiology Government of India, Primary Health Centre Campus Kallur-627 010, Tirunelveli District, Tamil Nadu, India

Honorable Member	Dr.Ranjith.D Assistant Professor, Department of Veterinary Pharmacology and Toxicology, College of Veterinary and Animal Sciences, Pookode, Wayanad – 673576. Kerala, India
Honorable Member	Dr.Prantosh K. Paul Assistant Professor, Department of Computer & Information Science, Raiganj University, Raiganj, West Bengal-733 134, India.
Honorable Member	Dr. Ajay Anil Gurjar Professor & Dean Academics, Sipna College of Engineering & Technology, Amravati(M.S)- 444606,India.
Honorable Member	Dr.V.E.Nethaji Mariappan Scientist"F" Centre for Remote Sensing and Geoinformatics Sathyabama University,Rajiv Gandhi Road, Sholinganallur, Chennai – 600119,Tamil Nadu
Honorable Member	Dr.N.Mahesh Assistant Professor – III Department of Chemistry & Biosciences SASTRA University Srinivasa Ramanujan Centre, Kumbakonam, Thanjavur Dist, Tamilnadu, INDIA
Honorable Member	Dr.Sumit Kumar Gupta Dean of Science, Department of Physics, Parishkar College of Global Excellence, Jaipur, Rajasthan, India
Honorable Member	Mr.S.M.Prasad Assistant Professor, Department of Nutrition and Dietetics, Sadakathullah Appa College, Rahmath Nagar, Tirunelveli-627011. T.N.India
Honorable Member	Dr.Prakash.M Professor, Department of Genetics and Plant Breeding, Faculty of Agriculture, Annamalai University, Annamalai nagar- 608002. Cuddalore District
Honorable Member	Dr.M.N.Harisha Guest Lecturer, Department of Wildlife and Management, Kuvempu University, Jnanasahyadri, Shankaraghatta - 577451. Shimoga, Karnataka, India
Honorable Member	Mr.Sridhar Ramachandran Assistant Professor, Department of Biological Science, Gojan College of Teacher Education, Chennai-600 052, TamilNadu, India

Honorable Member	Dr.P.Jeyaseelan Department of Agricultural Extension, Faculty of Agriculture, Annamalai University, Annamalai Nagar – 608 002, Cuddalore
Honorable Member	Dr.Suja George Principal Scientist, Department of Biotechnology, M.S. Swaminathan Research Foundation, Taramani, Chennai 600113.
Honorable Member	Dr.Muthuraman A., Senior Lecturerm , Pharmacological unit, AIMST University, 08100 Bedong, Kedah, Malaysia
Honorable Member	Dr.G.Rama Rao Principal Scientist &Head, Dept.of Crop Physiology, RARS Lam, Guntur-522034, ANGR Agricultural University, Andhra Pradesh, India
Honorable Member	Dr.Y.V. Krishna Reddy Department of Agricultural Engineering, Aditya Engineering College, Surampalem- 533437, East –Godavari, A.P., India
Honorable Member	Dr.Pushpa S Murthy Senior Scientist, Department of Spice and Flavor Science, AcSIR Associate Professor (Biological Sciences), CSIR - Central Food Technological Research Inst. MYSURU, Karnataka, INDIA
Honorable Member	Dr.Mathews Plamoottil Asst. Professor in Zoology, Govt. College Chavara, Kollam, Kerala, India
Honorable Member	Dr.N.Vijayakumar Assistant Professor Dept.of Biochemistry & Biotechnology Annamalai University, Annamalainagar-608 002, Tamilnadu, India.
Honorable Member	Dr. E.Emimal Victoria Assistant Professor, Department of Zoology Sri Meenakshi Govt. Arts College for Women, Madurai, TamilNadu, India
Honorable Member	Dr.C.Kandeepan Asst.Professor and Head, PG Department of Zoology, A.P.A College of Arts and Culture, Palani-624601, Dindigul Dt. Tamil Nadu,India.

Honorable Member	Dr.A.Radha Assistant Professor, Dept. of Zoology Kunthavai Naacchiyar Govt Arts College for Women, Thanjavur-7,TamilNadu, India.
Honorable Member	Dr.P.Ramachandran Director & Head, Trichy Institute of Regenerative Medicine, Thillai Nagar West, Trichy, Tamil Nadu, India.
Honorable Member	Dr.B.Kaleeswaran Assistant Professor, Dept. of Zoology & Biotechnology, A.V.V.M.Sri Pushpam College, Poondi, Thanjavur, TamilNadu, India.
Honorable Member	Dr.S.Yamini Sudha Lakshmi Assistant Professor, Department of Medical Biochemistry, University of Madras, Taramani Campus, Chennai-600113, TamilNadu, India.
Honorable Member	Dr.K.Nagarajan Associate Professor & Head Department of Zoology VHN Senthikumara Nadar College, Virudhunagar, TamilNadu, India.
Honorable Member	Dr.S.Lingathurai Assistant Professor, Department of Zoology and Research Centre, at Aditanar College of Arts & Science, Virapandianpattinam, Tiruchendur - 628 216 Thoothukudi District.
Honorable Member	Dr.D.Sivaraman Scientist-C Department of Pharmacology, Sathyabama University, Jeppiaar Nagar, Rajiv Gandhi road, Chennai- 600 119. TamilNadu, India.
Honorable Member	Dr.Suja George Principal Scientist, Department of Biotechnology, M.S. Swaminathan Research Foundation, Taramani, Chennai 600113.
Honorable Member	Dr.S.V.Sai Prasad Principal Scientist & Head ICAR-IARI, Regional Station, Near Agriculture College, Indore – 452 001, Madhya Pradesh, India

Honorable Member	Subburaj. M Authorised Officer, Kolkata Seaport, Kolkata International Airport and Haldia port Food Safety and Standards Authority of India Ministry of Health and Family welfare, Govt. of India Benfish Tower, 31 GN Block, Sector V, Salt lake city Kolkata -700091, India
Honorable Member	Dr.Ga.Bakavathiappan Associate Professor in Zoology SBK College, Aruppukottai - 626 101, TamilNadu, India E.Mail: ga.bakavathiappan@gmail.com
Honorable Member	Dr.Omkar Prasad Baidya Assistant Professor, ESI-PGIMSR and ESIC Medical College, Joka, Kolkata,West Bengal, India
Honorable Member	Dr. Preethi Balasundaram Post-Doctoral Fellow, Wieden Group Alberta RNA Research & Training Institute Department of Chemistry and Biochemistry University of Lethbridge, 4401 University Drive Lethbridge, Alberta, Canada T1K 3M4
Honorable Member	Dr. Horne Iona Averal IQAC Coordinator, Associate Professor PG Research Department of Zoology, Holy cross college (Autonomous), Trichy. TamilNadu, India.
Honorable Member	Dr. S. Thenmozhi Assistant Professor (SS & AC) Soil Fertility and Irrigation Water Management TNAU, Coimbatore, Tamil Nadu, India
Honorable Member	Dr. S. Suganya Kanna Associate Professor, (Agricultural Entomology), Agricultural College and Research Institute, Tamil Nadu Agricultural University. Coimbatore, Tamil Nadu, India
Honorable Member	Dr.K.Saravanan Assistant Professor ,PG & Research Dept. of Zoology, Nehru Memorial College (Autonomous), Puthanampatti, Tiruchirappalli, TamilNadu,India
Honorable Member	Dr.C.Ravinder Singh Chief Scientist - Tissue Culture & Hydroponics AAKASH GREEN RESEARCH PRIVATE LIMITED 14B/1, Bryant Nagar, 9th Street East Thoothukudi, Tamil Nadu - 628008, India.

Honorable Member	Dr.M.Biruntha Assistant Professor, Department of Animal Health and Management, Alagappa University, Karaikudi, TamilNadu, India
Honorable Member	Dr.S.Sasikala Head&Associate Professor, Department of Computer Applications, Hindusthan College of Arts and Science, Coimbatore - 641 028, Tamilnadu, India.
Honorable Member	Dr.Y.V. Krishna Reddy Department of Agricultural Engineering, Aditya Engineering College, Surampalem- 533437, East -Godavari, A.P., India
Honorable Member	Dr.Manigopa Chakraborty Chief Scientist cum University Professor Department of Genetics & Plant Breeding, Birsa Agricultural University, Kanke, Ranchi, Jharkhand – 834006., India.
Honorable Member	Dr.Huda Falah Hasan Radi Alqaraghuli Assistant Professor, College of Veterinary Medicine, University of Baghdad, Baghdad, Iraq.
Honorable Member	Dr.Arvind Prasad Dwivedi Lecturer, Department of Biochemistry, Govt. Sanjay Gandhi Smriti College, Sidhi, Madhya Pradesh, India.
Honorable Member	Dr.A.Suganya Associate Professor, Department of Agricultural Science, Tamil Nadu Agricultural University, Coimbatore, Tamil Nadu, India.
Honorable Member	Dr.M.Karthikeyan Assistant Professor (Plant Pathology) Department of Vegetable Crops ,HC&RI Tamil Nadu Agricultural University ,Coimbatore TamilNadu,India
Honorable Member	Vijaya Bhaskara Reddy.MUTHA Asst. Prof.Faculty of Public Health, St Theresa International College, 1 Moo 6 Rangsit-Nakhon Nayok Road (Klong 14), Bungsan,Ongkharak – 26120 Nakhon Nayok, Thailand

Honorable Member	Dr.Thirumal Kumar D Assistant Professor(Jr) Department of Integrative Biology, School of Bio Sciences and Technology Vellore Institute of Technology Vellore – 632014, Tamilnadu, India.
Honorable Member	Dr. Saikat Sen Dean of Faculty, Faculty of Pharmaceutical Sciences Assam down town University, Panikhaiti, Guwahati, Assam - 781026, India
Honorable Member	Dr. P. Chandramani Professor, (Agricultural Entomology), Agricultural College and Research Institute, Tamil Nadu Agricultural University Kudumiyanmalai – 622 104. Pudukkottai Dist., Tamil Nadu, India
Honorable Member	Dr.S.Prema Associate Professor of Computer Science, Arulmigu arthanareeswarar arts and science college, Tiruchengode, Tamilnadu

Indian Journal of Natural Sciences (IJONS)

Volume XIV (14) October 2023 CODEN: IJONS (80) (2023) ISSUE 80 ISSN: 0976 - 0997

S. No.	CONTENTS	Page No.
292	Solar & RFID Based Smart E-Vehicle Charging Station Deepak Vala, A B Bambhaniya, Yogesh Prajapati and Sarvesh Pal	63000-63005
293	Tunable / Reconfigurable Filter on Liquid Crystal Polymer Mehul Thakkar, Pravin Prajapati, Hitesh Shah	63006-63013
294	Pore-Based Fingerprint Recognition: An Exploration of Performance and Robustness Priyanka Patel, Heli Nandani and Rinkal Mav	63014-63025
295	Reduction of Power System Pollution by using Active Filter in Alternating Power Supply Pankaj.C.Patel and Hansa.H.Patel	63026-63030
296	Characteristics and Physiochemical Properties of Deep Eutectic Solvents: A Comprehensive Review Jigesh Mehta, Anand Metre, Mathurkumar S Bhakhar ,Vishal Shah, Pratima Wadhwani, and Piyush B. Vanzara	63031-63040
297	A Comprehensive Review of Machine Learning Techniques for Cloud Computing Environments: Harnessing Scalability and Cost-Effectiveness Anjuman Ranavadiya, Disha R. Patel ¹ and Nimesh Vaidya	63041-63047
298	Experimental Investigation of Newly Developed Evacuated Tube Collector Coupled Double Basin Solar still with Heat Storage Material. Kamlesh Pansal and Bharat Ramani	63048-63058
299	A Bibliometric Analysis and Visualization of Global Research on Urban Livelihood Jiaur Rahaman and Biswajit Das	63059-63066
300	Solving System of Lane-Emden type Equations using Taylor Series S. Yugesh, B. Vanasri Vignesh and R. Aarthi	63067-63072
301	Synthesis, Characterization and Thermal study of NiTiO ₃ / PVA Nanocomposite Film Anadure Anilkumar, Sangappa K Ganiger, Arunkumar Lagashetty and Vijaykumar Durg	63073-63079
302	Overview of Viruses and their Pandemic Impact during 20 th Century Galanki Vasantha, Sirisha Konda and Dakamarri Ravikiran	63080-63100
303	A Study on the Medical Diagnosis using Cubic Root Fuzzy Sets in MCDM D.Sivakumar and S.Sangeetha	63101-63110
304	Determining Factors for Farmer Producers Organization Formation : a Special Reference to Tamil Nadu Sasikanth R , S. Ravichandran, V. Banumathy and D. Venkatakrishnan	63111-63117
305	Green Synthesis of CuO Nanostructures from <i>Murraya koenigii</i> Leaf Extract and Photodegradation Efficiency on Methyl Orange Dye M.Muththamizh, N.Punitha , D. Geetha and P.S. Ramesh	63118-63126
306	Hypersoft Generalized Closed Sets in Hypersoft Topological Spaces Mythili .S and Arokialancy.A	63127-63131

307	Five Dimensional Bianchi Type-III String Cosmological Models For Perfect Fluid Distribution in General Relativity. Tasneem Sanawadwala* and Keerti Acharya	63132-63138
308	Runoff Assessment and Response to Land use and Land Cover Changes by using Remote Sensing and GIS Kavita Singh, Ipsita Bose Roy Choudhury and P Saritha	63139-63149
309	New R Type Averaging Operators on Z-Numbers and its Application in Replacement Problem K.Parameswari, P.Veerammal and G.Velammal	63150-63156
310	Fractional Thermoelasticity Problem of Infinite Solid Disk-Boundary Condition Value Problem Ravi B. Chaware, Sunil D. Bagde and Suchitra A. Meshram	63157-63166
311	Optimal Transportation Strategy using-Decision Making Amali Theresa S, and Sahaya Sudha A	63167-63175
312	Inhibitory Efficacy of Hesperidin against a Variety of Cancer Targets by <i>In silico</i> Virtual Screening Krithiga Balakrishnan, Ramanathan Shreemaya, Sowmya Sekar and Jayaprakash Arul	63176-63184
313	Antiophidic Plants Used In India: A Brief Overview Amrita Babu ¹ , Dithu Thekkekkara ^{2*} , SK.Meheronnisha ³ and	63185-63194
314	Regulatory Requirements for Combination Products in the US, China, and Japan Harshitha P, Shivanand Mutta and C. S. Lakshmeesha	63195-63204
315	Studies on the Exploitation of ITK Practices Adopted by the Farmers of the Cauvery Delta Region for the Control of Brown Leaf Spot and Blast Disease in Rice R.Livitha, D. John Christopher and V. Jai Ganesh	63205-63216
316	Trapezoidal Intuitionistic Fuzzy Sequencing Problem R. Santhi and A.Nandhini	63217-63224
317	In – vitro Evaluation of Neuroprotective Potential of Siddha Medicine Sagala Noi Choornam Shalini.V, Sivakkumar.S and Meenakumari. R	63225-63230
318	Spatial - Radio Mapping System using Mobile Access Point Model with Mobile Sensor A.Kavitha and M.Gobi	63231-63237
319	IFsgp* Compositional Relation in Pattern Recognition Application Chandhini. J and Uma. N	63238-63244
320	Algebraic Operations on Quin – Terranean Fuzzy Numbers P. Rajarajeswari, T. Thirunamakkani, and P. Pooranadevi	63245-63253
321	Energy Level Connectedness on Fuzzy Graphs R.Buvaneswari and K.Senbaga Priya	63254-63259
322	Special Restricted Interval Valued Picture Fuzzy Matrix and its Applications in Decision Making P. Rajarajeswari and D. Nandhini	63260-63273
323	A Study on the Infusion of Genetic Algebra and its Constituents Karen Felicita C and Sahaya Sudha A,	63274-63277

324	Interval Valued Picture Fuzzy Matrices and its Application in Medical Diagnosis P. Rajarajeswari and D. Nandhini	63278-63291
325	A Study on Multicriteria Decision Making Approach based on Crop Diseases of Crop Amirtha [Co 09004] Amala Kaavya .C and A.Sahaya Sudha	63292-63299
326	A Study on Control of Fuzzy based Compound Fraction Defectives in a Production Process using Control Chart Technique N. Arunthadhi and S. Devaarul	63300-63305
327	A New Ranking for Solving Trapezoidal and Pentagonal Picture Fuzzy Transportation Problem T.Narppasalai Arasu and M.Sivapriya	63306-63316
328	Special Algebraic Operations on Quin – Terranean Fuzzy Numbers P. Rajarajeswari and T. Thirunamakkan	63317-63325
329	Dominating Function in Fractional Directed Graph M. Meenakshi and V. Pankajam	63326-63332
330	Some Properties of Fuzzy Soft n-Paranormal Operator A Radharamani and T Nagajothi	63333-63342
331	Third Order Semi-Canonical Nonlinear Difference Equations S. Kaleeswari and S. Rangasri	63343-63349
332	Triple Connected Certified Domination in Graphs G. Mahadevan, S. Kaviya and C. Sivagnanam	63350-63355
333	On Neutrosophic Mildly Generalized Star αJ - Closed Sets In Neutrosophic Topological Spaces R M Samukthaa and C Suganthi	63356-63362
334	Contribution to Six Sigma Based Waiting Time Control Chart With $(M M 1)$ ($\infty FCFS$) Queuing Model Using Process Capability Mani N and P. K. Sivakumaran	63363-63367
335	Multi Objective Task Scheduling Optimization in Cloud Computing Environment using Hybrid Firefly and Lion Optimizer (HFLO) Karunya.N and D. Gayathri Devi	63368-63374
336	Identifying Locating Sets In Zero Divisor Graph Of A Lattice S. Nithya and S. Valarmathi	63375-63380
337	Manufacturing Company Performance Analysis using Time Series Nanthitha. L and Mani. N	63381-63386
338	Fuzzy Solution for Fractional Order Tumor System Using Laplace Transform and Stability Analysis P. Dhanalakshmi and E. Shrilekha	63387-63392
339	Algebraic Operations on Bipolar Pythagorean Fuzzy Matrices T. Muthuraji and R. Punitha	63393-63400
340	Triangular Path Decomposition of Triangular Cyclic Snake Graphs M.Subbulakshmi and S.Chitra Devi	63401-63410
341	Preliminary Phytochemical Studies on Tropical Fruit: Lansium domesticum Correa (Meliaceae) Sruthi Gopan.M and Sudha Bai.R	63411-63420

342	Silver and Copper Nanoparticles Enhance <i>In-vitro</i> Plant Growth and Secondary Metabolites Production: Current Status and Future Perspectives Chetna and Simranjeet Kaur	63421-63440
343	A New Algorithm for Trapezoidal Picture Fuzzy Linear Programming Problem B.Thenmozhi1 and M.Haripriya	63441-63446
344	A New Generalization of Power Rama Distribution with Characterizations and Applications in Medical Sciences Soumya V. P, V. Rajagopalan and V Sreejith	63447-63463
345	Johan Coloring of Network Graphs S.Florence Poornima and A.Arokia Lancy	63464-63469
346	Optimizing Transportation Problem with Pentagonal Fuzzy Numbers Madhav R Fegade and Aniket A. Muley	63470-63476
347	A New Algorithm for Solving Interval Valued Picture Fuzzy Transportation Problems P.Rajarajeswari and K.Vanithamani	63477-63484
348	A Study on School Education System, in East Godavari District of Andhra Pradesh M. Anuradha and Kannuru Hari Krishna	63485-63493
349	Antiviral Prophylaxis: Impending Cradles in Covid -19 Outburst Kavya Nainita Manchikanti, K Vinod Kumar, Nawaz Mahammed , P. Chiranjeevi, G. Kranthi Kumar and T. Reshma	63494-63505
350	Phytochemical Constituency Profiling and Antimicrobial Activity of Haloplegma duperreyi From The Mandapam, Rameshwaram Coast, Tamil Nadu. M. Shantha and A. Arockia Jenecius Alphonse	63506-63514
351	Fuzzy Logic Control based Solar Fed Microgrid and Damping Method of Droop Control M.Kondalu, P. Mallikarjun and P.Satyaendra Kumar	63515-63520
352	Ethnobotanical Studies of Wild Edible Plants used by the Indigenous Tribe of Chakhesang, Phek District, Nagaland Vepu and T.Lirola Sangtam	63521-63529
353	Animal Models for Preclinical Drug Research on Ulcerative Colitis: A Review Shamal R. Borude and Devendra S. Shirode	63530-63542
354	The Significance of Soil Enzymes in Carbon Sequestration Dhruv Y Haldaria and Hiren K.Patel	63543-63554
355	Real Time Emotion Recognition Using Convolutional Neural Networks G.S.K.Gayatri Devi, L.Sailaja, P.Kiran, B.Priya and G.Govardhan Raju	63555-63561
356	A Novel Mathematical Approach for an Automated Estimation Strategy in Obstetrics using Image Processing Techniques P.Sheeba Ranjini and T.Hemamalini	63562-63567

357	Identification of Changes in Brain Activity for Alzheimer Disease using Voxel-based Neuroimaging Analysis Kalpana R, Swarna Kedia and T.N. Vishalakshi	63568-63578
358	Vertical Electrical Soundings (VES) Exploration Analysis of Vythiri Taluk, Wayanad District, Kerala, India using IPI2WIN Insaf. M and D .Nagaraju	63579-63585
359	Development and Evaluation of Ezetimibe Oral Fast Dissolving Films Nandini Jampana and Jyosna Doniparthi	63586-63594
360	An Analytical Method for the Determination of Benzodiazepine Drugs from Forensic Biological Matrices Ravshish Kaur Kohli and Mridu Sharma	63595-63598
361	Implementation of Energy Efficient Hybrid Adder for Approximate Computing Applications P.Nandha Kumar, R.V.V.Murali Krishna and B. Narender Reddy	63599-63606
362	Social Media Infodemic during Covid -19 Second Wave in India Garima Gunawat and Vaishali Kapoor	63607-63617
363	Rapid Stability Indicating HPLC Method for the Estimation of Teriflunamide in Teriflunomide Pharmaceutical Dosage Forms Suresh Kumar Raju.V, P. Sanjeeva and P. Venkata Ramana	63618-63625
364	Intelligent Cruising and Road Quality Mapping K.Kabilan and K.Madheswari	63626-63632
365	Musculoskeletal Pain in Patients with Paraplegic Spinal Cord Injury: Prevalence and Severity Jenny D. Chaudhari, Vivek H. Ramanandi, Mahima Y. Tailor and Priyanshi R. Patel	63633-63638
366	A Study to Analyze the Prescribing Pattern and the Role of Diuretics in Systolic Heart Failure Patients Angel Mariam Titus, Neenu Mathew, Neethu.J, Parvathi Baiju, Sujith Kumar.S, Jeny Samuel and Boby Johns G	63639-63643
367	A Review on Syntheisis of DHA (Dehydroacetic Acid) based Hetrocyclic Schiff's base and their Metal Complexes Having Different Applications in Various Fields Satvinder Khatkar, Sushil Kumar, Vivek Sharma, Vikash Singh, Dhruvin Pareek and Bhawna Pareek	63644-63658
368	A Note on Fuzzy Soft Unitary Operator in Fuzzy Soft Hilbert space A Radharamani and T Nagajothi	63659-63665
369	Spherical Picture Fuzzy Sets Rajarajeswari Palanisamy and Reshma Ranganathan	63666-63675
370	Solving Matrix Games with Trapezoidal Intuitionistic Fuzzy Payoff using Score Function G.Sasikala and S. A.Sahathana Thasneem	63676-63682

371	(α,β) Quasi Class (Q) and (α,β) Quasi Normal Composition and Weighted Composition Operators Radharamani and N. Sathyavathi	63683-63688
372	Solving Fuzzy Game of Order 3x3 using Nonagonal Fuzzy Numbers G.Sasikala and R.Umamaheswari	63689-63694
373	Distance Measures for Spherical Picture Fuzzy Sets and its Application in Multi Criteria Decision Making Rajarajeswari Palanisamy and Reshma Ranganathan	63695-63702
374	Joint (α, β) – Quasi Normal Operators in Several Variables Radharamani and N. Sathyavathi	63703-63707
375	A Novel Simplex Technique to Solve the Linear Fractional Programming Problem using the Trapezoidal Fuzzy Neutrosophic Number P.Rajarajeswari and M.Shyamala	63708-63715
376	Fuzzy Multi Number's Ranking Measure in Transportation Problem E.Vivek, N. Uma and M. Kanishkar	63716-63724
377	An Efficient Numerical Approach Based on Wavelets Operational Matrices for Multi Term Fractional Differential Equations R. Aruldoss and K. Balaji	63725-63735
378	Titanium Dioxide Nanoparticles as a Highly Efficient Reusable Catalyst for the Synthesis of 2-Amino-4H-Pyran Abdulfatah Abdullah Abdu Saifan, Amat Alrahman Othman, Priyanka Sunil Pinate, Nabeel M. S. Kaawash and Sangita Sanjay Makone	63736-63747
379	Prim's Algorithm based on New Ranking Method for Minimum Spanning Tree Problem in a Z-Graph P. Vijayalakshmi	63748-63752
380	Analysis of a Morkovian Retrial Queue with Feedback, Recurrent Customers and Server Vacation S.Pazhani Bala Murugan and P.Madhangi	63753-63759
381	Periodontal Risk Assessment and Oral Microbiome Profile : A Comprehensive Two-Way Diagnosis for Enhanced Understanding and Clinical Significance J.Bhuvaneswarri, Julius Amaldas, Ramya.V and Snophia Rani Rajamani	63760-63767
382	Antimicrobial Activity of Biosynthesized Silver Nanoparticles Chitra Rathod, Vijay Jagdish Upadhye and Anupama Shrivastav	63768-63771
383	Enhancing the Biotic Stress Resistance in Horticultural Crops using Recombinant DNA Technology Niyati, Kuenga Penjor Gyeltshen, Tshering Tobgay Dorji, Muskan and Suruchi Jindal	63772-63780
384	Utilization of Diets Amended Probiotics for the Growth Performances and Immune Responses to Infection with <i>Vibrio harveyi</i> in <i>Litopenaeus vannamei</i> Venkatesan.M , Sudhakar.S and Jayaprakash. R	63781-63787
385	Text Mining and Health Care Jayasudha.J and Manju.V	63788-63798
386	A Review on Various Analytical Methods for Analysis of Ramipril Rama Rao Tadikonda and Ramya Alwala	63799-63820

387	A Review on Herbal Transdermal Drug Delivery System: Pulmonary Disorder Komala M and Logesh V	63821-63831
388	Investigation on Photodegradation Efficacy of Malachite Green Dye by Nickel Sulfide with Graphene Oxide (NiS/GO) Nanocomposite G.Priyadharshini, D.Geetha and P.S.Ramesh	63832-63841
389	Impact of Religious Teachings in Causing Transition among Older Adults Dakshita Pandey and Rajat Kanti Mitra	63842-63854
390	A Study on Search Engine Optimization Vs Social Media Marketing Affecting Consumer Behaviour towards Web Stores Ramasubramaniam P and Darthy Agnell Mary	63855-63867
391	Effect of Hydrologic Variation on Community Structure and Habitat Selection of Stream Fishes in the Western Ghats of Southern Kerala Ruby Thomas and K. Raju Thomas	63868-63874
392	Study to Assess the Effectiveness of an Information Booklet on Knowledge Regarding Planned Parenthood among Eligible Couples at Selected Areas of Surat District, Gujarat Ashwini Patil and M Jayalakshmi	63875-63879
393	Fixed Point of Kannan Type and Asymptotic Set-Valued Maps Defined on Sets in Complete Metric Spaces Murchana Neog	63880-63886
394	Resolvable Odd Cycle Factorization of Tensor Product of Complete Graphs S. Sampath Kumar and K.Sankar	63887-63893
395	Breakthrough Therapy Designation: Examining the Qualification Requirements Thejesh K S, Vedamurthy Joshi, Prakash Goudanvar, Sharath H D and Varshith Kumar	63894-63904
396	A Literature Review on Cloud Computing in Major Sectors K.Porkodi and D. Raj Balaji	63905-63918
397	Correlation between Level of Stress and Severity of Primary Dysmenorrhea in College Going Girls: A Survey Study Dolly Shah, Nilesh Parmar and Bhavana Gadhavi	63919-63925
398	Independent Semitotal Domination in Product Graphs J.Sabari Manju and S.V.Padmavathi	63926-63933
399	Water Quality Prediction using Machine Learning Gideon Asante and Kaushal Singh	63934-63940
400	Quantitative Data of Transfer of Drinking Water Fluoride from Pregnant Women to Cord Blood – A Systematic Review Thippeswamy H.M, Nanditha Kumar.M and Prashanth S.N	63941-63948
401	Green potentialities. Sharad Sinha, Prachi Gupta and Pankaj Mathur	63949-63959
402	Prevalence of Physical Fitness in Community Dwelling Middle - Aged Women - a Cross Sectional Study Madhavi Sontakkey and Nidhi Vasava	63960-63965
403	Juvenile Myasthenia Gravis: A Concise Review Case Report Karra. Geetha, T. Chandana, R. Sakshi, Ch. Sai Chandu and T. Rama Rao	63966-63972

404	A Study to Evaluate the Effectiveness of Sartorius Mobilization with Stretching on Pain among Female Couturiers S. Senthil Kumar and Natasha Verma	63973-63977
405	The Role of Performance in a Teen's Failure to Excel in Math R. Prema, P. Rajeswari, R.S. Sripoorni, A. Shanthi and R. Radha	63978-63987
406	Losartan Potassium Sustained and Hydrochlorothiazide Immediate Release Formulation Development and Assessment for the Treatment of Hypertension Bimal Debbarma and Chandra Kishore Tyagi	63988-64009
407	Phytochemical Screening and Assessment of Bioactive Constituents Present in <i>Ganoderma lucidum</i> using GC-MS Analysis Manisha Devi, Anbu Jayaraman, Parasuraman Pavadai and Damodar Nayak Ammunje	64010-64018
408	Fecundity Study on Selected Ornamental Fishes using Natrum Muriaticum 30c Potency Sudha.C	64019-64024
409	Toxicological Effects of the Organophosphate Pesticide – Quinalphos on the Haematological, Histopathological and Marker Enzyme Level of the Freshwater Fish <i>Oreochromis mossambicus</i> Arshitha A and Pawlin Vasanthi Joseph	64025-64032
410	Comparative Study on Efficacy of Instrument Assisted Soft Tissue Mobilization and Strain Counter strain on Pressure Pain Threshold, Muscle Hardness and Neck Functions In Upper Trapezitis Patients Prachi Patel and Neeti Mishra	64033-64042
411	A Comprehensive Review on Medicinal Plant Species of Genus <i>Ocimum</i> and <i>Mentha</i> : A Promising Hand to treat Urolithiasis C.S. Tailor and J. Syan	64043-64049
412	Effect of Gross Myofascial Release Combined with Focused Myofascial Release Versus Capsular Stretching on Pain and Range of Motion in Individuals with Adhesive Capsulitis: A Comparative Study Megha Suthar, Sonal Thakkar and Gaurav Patel	64050-64056
413	A Novel Simplex Technique to Solve Linear Fractional Programming Problem using the Pentagonal Neutrosophic Fuzzy Number P.Rajarajeswari and M.Shyamala	64057-64066
414	Discovery of Corona Domination Number for Some Notable Graphs L.Praveenkumar, G.Mahadevanand C.Sivagnanam	64067-64071
415	Qualitative Behavior of Fourth Order Neutral Difference Equations S. Kaleeswari and M.Buvanasankari	64072-64083
416	Effectiveness of Back School Protocol Versus Muscle Energy Technique on Pain, Functional Disability, and Range of Motion in Patients with Chronic Mechanical Low Back Pain Upasti Panchal, Dhaval Patel and Gaurav Patel	64084-64090
417	Weakly Coupled Lower and Upper Solutions for anti-Periodic Boundary Value Problem of First Order Delay Differential Equation Heramb Aiya and Y. S. Valaulikar	64091-64100
418	Generalized Semi Pre Connected Space in Neutrosophic Topological Spaces L.Praveenkumar, G.Mahadevan and C.Sivagnanam	64101-64105

419	An Application of Interval Valued Pythagorean Fuzzy Soft Matrix in Medical Diagnosis Rajarajeswari. P and Mathi Sujitha.T	64106-64114
420	A New Form of Separation Axioms in Binary Topological Spaces Jayalakshmi S and Manonmani A	64115-64120
421	2-Antidomatic Number of a Graph T. Ponnuchamy G. Mahadevan C. Sivagnanam	64121-64125
422	Construction of Acceptance Sampling Plans using Stratified Ranked Set Sampling by Logistic Distribution P. K. Deveka and K.Saranya	64126-64134
423	Some Theorems on Homomorphism of Intuitionistic Multi L –Fuzzy Subgroups C.Gowrishankar and M. Akilesh	64135-64143
444	Ranking Measures of Fuzzy Multi Numbers E. Vivek, N. Uma and M. Keerthika	64144-64154
445	Antischizophrenic-Active Medicinal Herbs and Complementary Therapies for the Treatment of Schizophrenia Vasudha Negi, Chandra Shekhar Tailor and Bhawana Bhatt	64155-64161
446	Fuzzy Proposed MCDM Method to Analyze the Risk Factors in Breast Cancer Iswariya S and Sahaya Sudha A	64162-64171
447	Triangular Decomposition of Some Special Graphs M.Subbulakshmi and S.Chitra Devi	64172-64177
448	A New Approach for Finding IBFS of Interval Valued Picture Fuzzy Transportation Problems P.Rajarajeswari, K.Vanithamani and D.Maheswari	64178-64186
449	On Selje Topological Spaces V.Jeyanthi¹ and N.Selvanandhini	64187-64193
450	B-Hψ-Open Sets in HGTS R. Ramesh, L. Senthil Kumar and T. Muthukumar	64194-64199
451	Metric Dimension of BG ₂ (G) in an Algorithmic Aspect Sameerali C.P and Sameena K	64200-64203
452	Decomposition of ($\alpha H b$, δ) -Continuity R.Ramesh and R.Uma	64204-64210
453	An Extension of Some Products in Fermatean Neutrosophic Dombi Fuzzy Graphs D. Sasikala and B.Divya	64211-64222
454	Fuzzy Matroid from Fuzzy Graph R.Buvaneswari and S.Saranya	64223-64227
455	An Uniqueness of Drug Delivery Methods Practised in Siddha System of Medicine Jayalakshmi .J, Thirunarayanan. G and Sivakkumar .S	64228-64232
456	Brahmiyathi Pavanai Chooranam; A Novel Siddha Drug for Alzheimer's Disease – A Review Rujitha D, Sivakkumar S and R.Meenakumari	64233-64243
457	A New Insights on Kadukkai (<i>Terminalia chebula</i> .Retz.) as a Prebiotic and its Effect on Gut Health A.Aishwarya, B. K. Priya,V.Elakkiyaa³ and T. Lakshmikantham	64244-64250

458	Secured Routing and Data Communication in Wireless Sensor Network using Segmented Regressive Gradient Deep Artificial Neural Network BASED Algorithm D.Sudhakar and V.S.Meenakshi	64251-64260
459	Compositions of Knots using Alexander Polynomial G. Infant Gabriel and N. Uma	64261-64267
460	Impact of Covid-19 on Digital Payments N. Sivakumar	64268-64274
461	Anti-Anxiety and Anti-Depressant Activity of Methanolic Extract of Chrysanthemum morifolium Ramat in Swiss Albino Mice Priyanka Manoharan, Sureh Velayutham and Perumal Pandurangan	64275-64282
462	Nanoparticle Toxicity : A Review Surajit Majumder, Dipankar Saha and Soumitra Kumar Choudhuri	64283-64294
463	Generalized Semi Operators in Soft Multi Topological Spaces Inthumathi Velusamy, Gnanasoundari Arunagiri and Maheswari Marimuthu	64295-64302
464	Heptapartitioned Neurtosophic Topological Spaces V. Jeyanthi1 and T. Mythili	64303-64310
465	Interval-Valued Intuitionistic Fuzzy Convex Optimization Techniques R. Santhi and N. Udhayarani	64311-64315

Disaster Risk Reduction for Sustainable Livelihood Security



Disaster risk reduction is the concept and practice of reducing disaster risks through systematic efforts to analyze and reduce the causal factors of disasters. Current study estimates that by 2030, the world could experience more than 500 disasters per year. About 75% of extreme weather events are caused by climate change. In particular it is fueled by carbon emissions. The 2011 earthquake in eastern Japan killed many disabled people. A UN estimate found that 90% of deaths in developing countries were caused by weather and water

hazards from 1970 to 2019. Sudden disasters displace millions of people every year. Development activities may increase industrial hazards, leading to environmental emergencies and severe pollution events. Creating a map for disaster risk reduction can help identify other global agendas and unattainable goals, including the Sustainable Development Goals, the Paris Climate Agreement, the New Urban Agenda, and the Biodiversity Agenda. Every year 13th October is observed as International Day for Disaster Risk Reduction. The day was launched in 1989 at the call of the United Nations General Assembly to promote a global culture of risk-awareness and disaster reduction. In 2015, the Third UN world Conference on Disaster Risk Reduction in Sendai, Japan called for urgent strengthening of capacities at the local level to deal with disaster. The main objective of the Disaster Reduction Day is to raise awareness about how people and communities around the world can cope with disasters and the importance of managing those risks. Raise awareness of environmental risks, support and strengthen environmental mainstreaming in development and risk reduction policies and action. Improve coordination between civil society and government agencies in implementing DRR programs and government policies. Develop ecofriendly technologies it is essential for environmental sustainability. Collect detailed information on disaster events and use them to develop study plan methods. In particular, it is necessary to prioritize studies that have the potential to improve the tools necessary for early detection of disaster events. Universities, research institutes, colleges and other relevant centers should be involved in this. In the event of a hazard or disaster, it is essential that the community be provided with a process of establishing advance arrangements, technical support, tools and training to implement a timely, effective and appropriate plan. Disaster risk management mechanisms need to be strengthened by first understanding the existing or impending disaster risks. Among South Asian countries, India is the most vulnerable country to disasters due to its diverse and vulnerable geo-climatic nature. It is imperative to learn lessons from the impacts of past disasters. As a common but determined citizen of India, we can start today to contribute our little bit by whatever means/instruments we may be in whatever position we are in. It is the duty of each and every one of us to create enough awareness among our people to repair and preserve the damage caused during times of calamity especially economic mental and physical damage.

Editor, IJONS Image credit : UNO

Cover Image Ditch Jewel- Brachythemis contaminata, Family: Libellulidae

Photo Credit: R.Durai Babu, Ramanathapuram, Tamil Nadu, India.