

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.**

ijonstnsro@gmail.com, 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 Disciplinary Science Subjects
Review Process	Double Blind Review Process
Language	English
Publication Format	Print
Access	 OPEN ACCESS
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 Address	No 46-141, Meenakshipuram Rd, Near Post Office, 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 (Advisory / Peer Review)

Editor-in-Chief	
Dr.S.Vijikumar Director, TamilNadu Scientific Research Organisation Pudukkottai-622003, Tamil Nadu. India.	
Editorial Committee Members (Advisory / Peer Review)	
	Specialization
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 Mail: c.anandharamakrishnan@gmail.com Mobile: +91-97509 68404	Chemical Engineering
Dr.NEELESH SHARMA Professor & Head, Visiting Professor (South Korea and Brazil), ICAR-International Fellow, NAAS Associate, Veterinary Sciences & Animal Husbandry, SKUAST-J, R.S. Pura, Jammu, UT of Jammu & Kashmir-181 102, India. Email: drneeshsharma@gmail.com Mobile: +91-94192 48061	Veterinary Sciences & Animal Husbandry,
Dr.M.KRISHNAN Vice Chancellor, Central University of Tamil Nadu, Thiruvavur, Tamil Nadu. India. Mob: 9443998251, Mail: vc@cutn.ac.in	Biotechnology
Dr. B. VASEEHARAN Professor and Head, Department of Animal Health and Management, Alagappa University, Karaikudi – 630003 Tamil Nadu, India Mail : vaseeharanb@alagappauniversity.ac.in Mobile : +91 9894720893	Animal Health
Dr.PRAKASH.M Professor, Department of Genetics and Plant Breeding, Faculty of Agriculture, Annamalai University, Annamalai nagar- 608002.Cuddalore District. Mail: geeth_prakash@yahoo.co.in Mobile: 9443405026	Genetics and Plant Breeding

Dr.G.RAMA RAO Registrar, ANGR Agricultural University, Guntur, Andhra Pradesh, India Email ID: rrgutha@yahoo.com Mobile: 0863-2347101	Crop Physiology
Dr.C.BALUSAMI Assistant Professor, Department of Livestock Production and Management, College of Veterinary and Animal Sciences, Pookode-673576.Kerala, India.	Veterinary and Animal Sciences
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. E.mail :Ravi@aakash.green Mobile: +91 96004 86256.	Tissue Culture & Hydroponics
Dr.M.RAMESH Professor, Department of Biotechnology, Alagappa University, Karaikudi-630003,Sivagangai Dt, TamilNadu, India. Mail : rameshm@alagappauniversity.ac.in Mobile : +91 9442318200 +91 7904270252	Biotechnology
Dr.S.YAMINI SUDHA LAKSHMI Assistant Professor, Department of Medical Biochemistry, University of Madras,Taramani Campus, Chennai-600113,TamilNadu,India. Mail: sudha.yasula2000@gmail.com Mobile: 9444153155	Medical Biochemistry
Dr. R. SIVARAMAN Associate Professor, Department of Mathematics, Dwaraka Doss Goverdhan Doss Vaishnav College Arumpakkam, Chennai, Tamil Nadu, India Mail: rsivaraman1729@yahoo.co.in Mobile:7845014341	Mathematics
Dr.C.THAMARAISELVI Assistant Professor, Department of Biotechnology Mother Teresa Women's University Kodaikanal-624101,TamilNadu,India. Mail: thamaraibiotechnology@gmail.com Mob: +8903403375	Biotechnology
Dr.M.BIRUNTHA Assistant Professor, Department of Animal Health and Management, Alagappa University, Karaikudi, TamilNadu,India Mail: biruntha6675@gmail.com Mobile: 9487588765	Zoology

Dr. KOMALAVALLI NARAYANASWAMY Associate Professor and Head, PG and Research Department of Botany, Alagappa College of Arts & Science, Karaikudi, Tamil Nadu, India. Mail:nkomalavalli@gmail.com Mob: +91 94425 16227	Botany
Dr. K.GURUNATHAN Professor & Head, Department of Nano science & Technology, Alagappa University, Karaikudi, TamilNadu, India. Mail: gurukar50@gmail.com Mob: +91 9487412949	Nano Science & Technology
Dr. H. SYED JAHANGIR, Associate Professor, Department of Botany, Jamal Mohamed College (Autonomous) Tiruchirappalli- 620 020 Tamil Nadu, India Email: syedsanu@yahoo.co.in Mob: 91 94438 17623	Botany, Microbiology
Dr. SUJATHA ILANGO VAN, Assistant Professor and Head, PG & Research Department of Zoology Holy Cross College (Autonomous) Tiruchirappalli- 620002, Tamil Nadu, India Mail: sujasram03@yahoo.com Mobile No:-87603 50460, 86670 30469	Zoology
Dr. K. KUMARASWAMY Emeritus Professor, ICSSR-Senior Fellow Department of Geography, School of Earth Sciences Bharathidasan University Tiruchirappalli - 620 024, TN, INDIA Mail: kkumargeo@gmail.com,editorigs1926@gmail.com Mob : 91 9442157347 ; Office : 0431 2407079	Geography
Dr. S. BALASUBRAMANIAN Assistant Professor, Department of Mathematics, Government Arts College (A), Karur – 639 005, Tamil Nadu, India, Mail: mani5568215@gmail.com Mobile: 9788430724; (0)9440249972	Mathematics
Prof. K.RAMANATHAN Assistant Professor, Department of Microbiology, Maruthupandiyar College, Thanjavur, TamilNadu, India. Mob: +91 81100 27313 Mail: ramanathanbio@gmail.com	Bioinformatics
Dr.SUBBIAH POOPATHI Scientist-G/ Director Grade ICMR-Vector control Research Centre, Medical complex, Indira Nagar,Pondicherry-605006,India Contact: +91-9443957479 Email: Subbiahpoopathi@rediffmail.com	Medical Entomology, Molecular Biology and Biotechnology

Dr.P.GOVINDARAJ Head & Associate Professor in Chemistry Department of Chemistry, SBK College, Aruppukottai - 626 101, TamilNadu, India Mob: 9487264394 Mail : govindsbk@gmail.com govindchem@sbkcollegeapk.in	Chemistry
Dr.SINDHU. K Assistant Professor, Department of Veterinary Pharmacology and Toxicology , Veterinary College, Gadag – 582101, Karnataka, India. Mobile : 9148130207 Email : drsindhu.vet@gmail.com	Veterinary Pharmacology and Toxicology
Dr. S. UMAMAHESWARI Assistant Professor, Department of Environmental Biotechnology, School of Environmental Sciences Bharathidasan University, Tiruchirappalli – 620 024, Tamil Nadu, India Mobile: +91 -9487254294 M-mail: umamaheswari@bdu.ac.in	Environmental Biotechnology
Dr. P. SANTHANAM Associate Professor, Department of Marine Science, School of Marine Sciences, Bharathidasan University, Tiruchirappalli, Tamil Nadu. India Mobile : +91 9894223482 E-mail: santhanam@bdu.ac.in	Marine Science,
Dr. S. JAYACHANDRAN Professor & Head, Dept. of Oral Medicine and Radiology, Tamil Nadu Govt. Dental College and Hospital, Chennai -600003, Tamil Nadu, India. Mobile No: 94441 85662. Email : drsjayachandranmds@yahoo.com	Oral Medicine and Radiology,
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. Mob: 8870638155 Mail : vmagri@rediffmail.com	Plant Pathology
Dr. RINA POONIA Associate Professor & Head, Department of Physical Education , Sports and Yoga, Faculty of Arts & Law, Manipal University, Jaipur, India email: rina.poonia@jaipur.manipal.edu Mobile: 8560097932	Physical Education , Sports and Yoga

Dr. M. LEKESHMNASWAMY Associate Professor, Head and Principal, PG and Research Department of Zoology, Kongunadu Arts and Science College G.N. mills (PO), Coimbatore-641 029, TamilNadu, India.	Zoology
Dr. N. BALAKRISHNAN Professor (Agrl. Entomology), Directorate of Research, Tamil Nadu Agricultural University, Lawley Road, Coimbatore, Tamil Nadu, India - 641003. Mail: balakrishnan.n@tnau.ac.in Mob: 8778947536	Agrl. Entomology
Dr. H. E. SYED MOHAMED Assistant Professor, P.G. Department of Zoology, Jamal Mohamed College (Autonomous), Tiruchirappalli – 620 020, Tamilnadu, India E.mail : syedmdjmc@gmail.com Mobile : +91 97901 12105	Radiation Ecology & Thermal Ecology
Dr.N.RAMAN Head and Associate Professor of Chemistry, VHNSN College (Autonomous), Virudhunagar-626 001, Tamil Nadu, India. Mob: 9245165958, Mail: raman@vhnsnc.edu.in	Bio-Inorganic Chemistry
Dr.A.DINAKARA RAO Professor, Center for Bioinformatics, School of Life Sciences, Pondicherry University, Puducherry, India Mob: +91-413-2654946 Mail: ampasaladr@bicpu.edu.in	Bioinformatics
Dr.K.SIVAKUMAR Professor, Department of Botany, Annamalai University, Annamalai Nagar, TamilNadu, India Mob: 9894801529, Mail: kshivam69@gmail.com	Water Algae, Taxonomy, Ecology and Biochemistry of Marine Macro Algae."(Seaweeds)
Dr.A.KALYANA SUNDARAM Associate Professor(Entomology), Tamil Nadu Agricultural University, Lawley Road Coimbatore, Tamil Nadu, - 641003.	Agri. Entomology
Dr.S.SENTHIL MURUGAN Associate Professor, Department of Animal Nutrition, College of Veterinary and Animal Sciences, Pookode, Wayanad, Kerala, India Mobile: - 9446233030 Email: - senthil@kvasu.ac.in	Animal Nutrition
Dr.V.VIOLET DHAYABARAN Associate Professor, Department of Chemistry, Bishop Heber College (Autonomous), Puthur, Tiruchirappalli, Tamil Nadu, India. E-mail : violetdhaya@gmail.com Mob : 9994291637	Chemistry

Dr.ANANTH NAG B Lecturer, Department of Environmental Science, Kuvempu University, Shivamogga, Karnataka, India. Mob: 9742617839 E-Mail: ananth_acc@rediffmail.com	Environmental Science
Dr.G. RUBALAKSHMI Scientist & Director, GRD Bio Research Centre #3/41, Nanbargal Nagar, Muthukalipatty, Rasipuram TK, Namakkal DT- 37401 Tamil Nadu, India. Mob: 09994953165 E-mail: rubalakshmig@yahoo.com	Biotechnology
Dr. S. EZHIL VENDAN Scientist, Food Protectants & Infestation Control Dept., CSIR-Central Food Technological Research Institute, Mysore – 570 020, Karnataka, Mobile: 9591714567 Mail: ezilvendan@cftri.res.in / geneezil@yahoo.co.in	Entomology
Dr.T.SHANMUGASUNDARAM Research Associate (Horticulture), Department of Vegetable Crops, Horticultural College and Research Institute, Tamil Nadu Agricultural University, Coimbatore-641 003, Tamil Nadu, India. Mob: 8903694612 Mail: drshanhort@gmail.com	Fruits, Vegetable Science and Hydroponics
Dr.C.KATHIRVELAN Assistant Professor, Department of Animal Nutrition Veterinary College and Research Institute, Tamil Nadu Veterinary and Animal Sciences University, Namakkal -637002. Tamil Nadu, India. Mob: +91-91762 17887 Mail: kadhirc@gmail.com	Animal Nutrition
Dr. JOHN ABRAHAM Professor, Livestock Production & Management College of Veterinary and Animal Sciences, Pookode, Wayanad. 673576, Kerala, India. Mob: - 9447617194 E.mail: john@kvasu.ac.in	Livestock Production & Management
Dr.P.KAVITHA Assistant Professor, Department of Zoology and Biotechnology, AVVM Sri Pushpam College (Autonomous), Poondi, Thanjavur, TamilNadu, India. Mob: 9443451776 Mail: rameshkavi.dharaka@gmail.com	Zoology and Biotechnology

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 Mobile- +91 9884304202 Mail: gopalmuthukrishnan@gmail.com	Microbiology
Dr.RANJITH.D Assistant Professor, Department of Veterinary Pharmacology and Toxicology, College of Veterinary and Animal Sciences, Pookode, Wayanad – 673576. Kerala, India Mail: ranjithd@kvasu.ac.in	Veterinary Pharmacology and Toxicology
Dr. AJAY ANIL GURJAR Professor & Dean Academics, Sipna College of Engineering & Technology, Amravati(M.S)- 444606,India. Mail: prof_gurjar1928@rediffmail.com	-Electronics & Telecommunication Engineering
Dr.N.MAHESH Sr.Assistant Professor, Department of Chemistry & Biosciences, SASTRA University Srinivasa Ramanujan Centre, Kumbakonam,Thanjavur Dist, Tamil nadu, India Mail: magi.mbbt.src.sastra.edu	Chemistry & Biosciences
Dr. SUMIT KUMAR GUPTA Dean of Science, Department of Physics, Parishkar College of Global Excellence , Jaipur, Rajasthan, India	Physics
Dr.M.N.HARISHA Guest Lecturer, Department of Wildlife and Management, Kuvempu University, Jnanasahyadri, Shankaraghatta - 577451. Shimoga, Karnataka, India Mob: 9986143991 E.Mail: harishwild@gmail.com	Wildlife Management,
Dr.P.JEYASEELAN Department of Agricultural Extension, Faculty of Agriculture, Annamalai University, Annamalai Nagar – 608 002, Cuddalore, Tamil Nadu, India Mob: 9894870355 Mail : jeyachris@rediffmail.com	Agricultural Extension

Dr. ARUNACHALAM MUTHURAMAN Associate Professor, Faculty Coordinator AIMST University, 08100 Bedong, Kedah, Malaysia. Mob: +60 - 0174509806 Mail: muthuraman.a@aimst.edu.my	Pharmacology, Toxicology, and Basic Health Sciences
Dr.Y.V. KRISHNA REDDY Asst.Professor, Department of Agricultural Engineering, Aditya Engineering College, Surampalem- 533437, East –Godavari, Andhra Pradesh, India Mob: 8978157071 Mail: krishnareddy029@gmail.com	Water System Technolog
Dr. PUSHPA S MURTHY Senior Principal scientist & Head Department of Plantation Products, Spices and Flavour Technology, Professor, Academy of Scientific and Innovative Research, CSIR-Central Food Technological Research Institute, Mysuru-570020,Karnataka,India Mob: 91-821-2514990 , E-mail: pushpa@cftri.res.in	Biotechnology
Dr.MATHEWS PLAMOOTTIL Principal, EKNM Government College Elerithattu Elerithattu P.O. Nileshtar Via. Kasaragod Dist. Kerala - 671314 mail: mathewsplamoottil@gmail.com Mob: 9447059690	Zoology
Dr.N.VIJAYAKUMAR Assistant Professor, Dept.of Biochemistry & Biotechnology, Annamalai University, Annamalai Nagar -608 002, Tamil Nadu, India. Mob: 9842574258, Mail: nvkbiochem@yahoo.co.in	Biochemistry & Biotechnology
Dr. E.EMIMAL VICTORIA Assistant Professor, Department of Zoology Sri Meenakshi Govt. Arts College for Women, Madurai, TamilNadu, India	Zoology
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. Mail: kansbiotech@gmail.com	Zoology
Dr.A.RADHA Assistant Professor, Department of Zoology Kunthavai Naacchiyar Govt Arts College for Women, Thanjavur-7, Tamil Nadu, India. Mobile : 8825858679 Mail: radhanov1969@gmail.com	Zoology

Dr.B.KALEESWARAN Assistant Professor, Dept. of Zoology & Biotechnology, A.V.V.M.Sri Pushpam College, Poondi, Thanjavur, TamilNadu, India. Mob: 9894542489 Mzookaleesh@gmail.com	Zoology and Biotechnology
Dr.K.NAGARAJAN Associate Professor & Head PG & Research Department of Zoology, VHN Senthikumara Nadar College (Autonomous) Virudhunagar TamilNadu, India. Mob: 9486746215 Mail: gurunagan@gmail.com	Zoology
Dr.S.LINGATHURAI Assistant Professor, Department of Zoology and Research Centre, at Aditanar College of Arts & Science, Virapandianpattinam, Tiruchendur - 628 216 Thoothukudi District Mob: 986576062 Mail: lings02@gmail.com	Zoology
Dr.D.SIVARAMAN Scientist-C, Department of Pharmacology, Sathyabama University, Jeppiaar Nagar, Rajiv Gandhi road, Chennai- 600 119. TamilNadu, India. Mob: 9841575334 Mail: sivaramand83@gmail.com	Pharmacology
Dr.S.V.SAI PRASAD Principal Scientist & Head ICAR-IARI, Regional Station, Near Agriculture College, Indore – 452 001, Madhya Pradesh, India Mail: sprasad98@gmail.com Mob: 9425957920	Genetics
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 Mob: (+91)- 9400128781 Mail: subuchem@gmail.com	Material Science

Dr.Ga.BAKAVATHIAPPAN Associate Professor & HOD Department of Zoology SBK College, Aruppukottai - 626 101, TamilNadu, India Mob: 94876 13732 E.Mail: ga.bakavathiappan@gmail.com	Zoology
Dr.OMKAR PRASAD BAIDYA Assistant Professor, ESI-PGIMSR and ESIC Medical College, Joka, Kolkata, West Bengal, India Mail: omkarprasadbaidya@gmail.com	
Dr. HORNE IONA AVERAL IQAC Coordinator, Associate Professor PG Research Department of Zoology, Holy Cross College (Autonomous), Trichy, Tamil Nadu, India. Mobile: 9443644858, E.Mail: profionahorne@gmail.com	Zoology
Dr. S. SUGANYA KANNA Professor & Head (Agrl. Entomology) Department of Plant Protection Technology, Horticultural College and Research Institute, Periyakulam-625 604, Tamil Nadu, India. Phone: 9486257636 , Email: muthiah2007@yahoo.co.in	Agrl. Entomology
Dr.K.SARAVANAN Assistant Professor , PG & Research Dept. of Zoology, Nehru Memorial College (Autonomous), Puthanampatti, Tiruchirappalli, TamilNadu,India, Mob: 9360313909 EMail: kaliyaperumalsaravanan72@gmail.com	Zoology
Dr.S.SASIKALA Head & Associate Professor, Department of Computer Applications, Hindusthan College of Arts and Science, Coimbatore - 641 028, Tamilnadu, India. Mail: iamsasikalamohit@gmail.com Mob: +0-91-9942333764	Computer Science
Dr. (Mrs.) MANIGOPA CHAKRABORTY Chief Scientist-cum-University Professor Maize Research Project (A.I.C.R.P.) Dept. of Plant Breeding and Genetics & Head, Dept. of Statistics & Computer Application Birsa Agricultural University, Kanke, Ranchi Jharkhand – 834006, Mob: +91-98357-66845 (M) Mail: drmanigopa@gmail.com	Genetics & Plant Breeding

Dr.ARVIND PRASAD DWIVEDI Lecturer, Department of Biochemistry, Govt. Sanjay Gandhi Smriti College, Sidhi, Madhya Pradesh, India. Mob: 7869822746 Mail: adarvindchitrakoot@gmail.com	Biochemistry
Dr.A.SUGANYA Associate Professor (SS&AC), Soil Science & Agricultural Chemistry Department of Agricultural Science, Tamil Nadu Agricultural University, Coimbatore, Tamil Nadu, India. Mob: 9442319028, Mail: suganssac2010@tnau.ac.in	Soil Science & Agricultural Chemistry
Dr.M.KARTHIKEYAN Assistant Professor (Plant Pathology) Department of Vegetable Crops ,HC&RI Tamil Nadu Agricultural University ,Coimbatore TamilNadu,India, Mob: 9788231129 Mail: karthikeyan.m@tnau.ac.in	Plant Pathology
Dr. VIJAYA BHASKARA REDDY.MUTHA Lecturer Faculty of Public Health, St Theresa International University, 1 Moo 6 Rangsit-Nakhon Nayok Road (Klong 14), Bungsan,Ongkharak – 26120 Nakhon Nayok, Thailand Mail: vijaybhaskar24@gmail.com	Public Health Research Biotechnology
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. Mail: thirumalkumar.d@gmail.com Mob: +91- 86562 95915	Biotechnology, Bioinformatics, Computational Biology
Dr. SAIKAT SEN Professor, Dean of Faculty, Faculty of Pharmaceutical Sciences, Assam down town University, Panikhaiti, Guwahati, Assam - 781026, India Mob: +91-8638603899/ +91-9678210021 Email: saikat.pharm@rediffmail.com	Pharmacology
Dr. P. CHANDRAMANI Professor and Head, (Agricultural Entomology), Department of Entomology, Agricultural College and Research Institute, Madurai Agriculture College Tamil Nadu Agricultural University Madurai., Tamil Nadu, India Mail: pcento12@gmail.com, Mob: 9789557307	Agricultural Entomology

Dr.S.PREMA Assistant Professor and Head Department of Computer Applications, Arulmigu arthanareeswarar arts and science college, Tiruchengode, Tamil Nadu, India Mail: premashanmuga11@gmail.com Mob: 9842979939	Computer Science
Dr. T.S.POORNAPPRIYA 12/29, Keela Kallukara Street, Eda Street, Tiruchirappalli – 620 001, Tamil Nadu, India. Mail: Poorna230priya@gmail.com Mob: 7010973534	Computer Science
Prof. G.GANESAN Professor, Department of Mathematics, Adikavi Nannaya University,Rajahmundry-533105, Andhra Pradesh, India Mail: prof.ganesan@yahoo.com	Mathematics
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.	Zoology.
Dr. RAJASHEKHAR O, PATIL Assistant Professor, Department of Environmental Management, Sant Gadge Maharaj College of Commerce & Economics, Mumbai 400004, India	Environmental Management
Dr.R.MUTHUKRISHNAN Associate Professor (SS & AC) & HOD (Crop Management) Department of Soil Science and Agricultural Chemistry, Vanavarayar Instituitl of Agricultural Manakkadavu, Pollachi-642- 103, TamilNadu, India	Soil Science and Agricultural Chemistry
Dr.K.KANIMOZHI Assistant Professor, Department of Chemistry UCE – BIT Campus, Tiruchirappalli 620 024 Contact no: 9841004769 Mail. ID: kanirams47@gmail.com	Chemistry
Dr.J.NESARAJAN Assistant Professor, Department of Zoology, Bishop Heber College, Tiruchirappalli – 17, Tamil Nadu, India E-mail : nesarajan.zy@bhc.edu.in Phone : 9080986713	Zoology
Dr. S.JEGAN KARUPPIAH Assistant Professor, Department of Rural Development Science, Arul Anandar College, Karmathur - 625 514, Madurai. Tamil Nadu, India E.Mail: jegan@aactni.edu.in	Rural Development Science

Dr.S.MARAGATHAM Professor (SS&AC) , Soil Science & Agricultural Chemistry, Tamil Nadu Agricultural University, Tamil Nadu Agricultural University, Coimbatore - 641 003, Tamil Nadu, India. Mail: maragatham.s@tnau.ac.in Mob: 9843214101	Soil Science & Agricultural Chemistry
Dr.PRANTOSH K. PAUL Assistant Professor And Coordinator, Department of Computer & Information Science, Raiganj University, Raiganj, West Bengal-733 134, India.	Computer Science
Dr.R.RAJKUMAR Senior Scientist, Village Resource Centre M S Swaminathan Research Foundation Pudukkottai, TamilNadu, India.© Mail: rajkumar@mssrf.res.in	Agricultural Economics
Dr.N.SHRUTHI Scientist Division of Animal Biochemistry, ICAR- IVRI, Izatnagar, Bareilly, Uttar Pradesh – 243 122. India. Mail: shruti.shruti@icar.gov.in	Animal Biochemistry
Dr. N. JEYAPANDIYAN, Assistant Professor, Department Agriculture, School of Agriculture and Biosciences Karunya Institute of Technology and Sciences, Coimbatore, Tamil Nadu- 641114 jeyapandiyan@karunya.edu; jp.agmet@gmail.com	Agricultural Microbiology
Dr. V. JANAHIRAMAN Assistant Professor (Agricultural Microbiology) Krishna College of Agriculture and Technology, Srirengapuram - 625532, Usilampatti, Madurai-Dt Affiliated by Tamil Nadu Agricultural University. Tamil Nadu, India. E.mail: greenramanhorti@gmail.com, Mobile: 91-9488362087	Agricultural Microbiology
Dr. R.MARY SUJA Director, Williams Research Centre, Nagarcoil – 1 Kanyakumari Dist, Tamil Nadu, India Mob: +91 87605 09942 Mail; rmsuja.83@gmail.com	Botany
Dr.S.ALAGUMANIAN Head & Assistant Professor, PG &Research Dept. of Botany, H.H. The Rajash's Collage, Pudukkottai, Tamilnadu, India, Mobile No. 9788211945 E.Mail: salagumanian@yahoo.co.in	Botany

Dr.N.VASANTHAKUMAR Librarian, The American College, Madurai – 625 002, Tamilnadu, India Mob: 9486026488 Mail: nvasanth74@gmail.com	Library and Information Science
Dr.R.JAYAPANDI Assistant Professor, Department of Bio Chemistry, The American College, Madurai – 625 002, Tamilnadu, IndiaMobile : 8489030173 Email : jeyapandi@americancollege.edu.in	Biochemistry-Zoology
Dr.K.F.BHARATI Assistant Professor, Department of Computer Science and Engineering, JNTUA College of Engineering, Ananthapuramu - 515002, Andhra Pradesh, India. Mob: 9441377789 email id: kfbharathi@gmail.com	Computer Science and Engineering
Dr. VIKAS SHARMA Chief Scientist , Agronomy (Crop Production) Regional Agricultural Research Station SKUAST- JAMMU, Tandwal-Rajouri, Teh. And District Rajouri, State Jammu and Kashmir, India Mail: vsagron@gmail.com, Mob: 09419135427	Agronomy
Dr.E.SELVARAJAN Assistant Professor Department of Genetic Engineering School of Bioengineering SRM Institute of Science and Technology Kattankulathur-603203, Chennai,Tamilnadu, India, Mob: 9843430425 Mail: selvarae@srmist.edu.in	Environmental Biotechnology
Dr.R.PARIMALAN Scientist (Agri. Biotech) & Hon. Faculty (QAAFI, UQ), Division of Genomic Resources, ICAR-National Bureau of Plant, Genetic Resources, PUSA Campus, New Delhi-110012, Mail: parimalan.r@gmail.com Phone: 011-25802889	Biotechnology
Dr.P.SIVAKUMAR, Associate Professor (Biotechnology) Dr. M. S. Swaminathan Agricultural College and Research Institute, Tamil Nadu Agricultural University, Eachangkottai, Thanjavur, Tamil Nadu, India Mail: ponsivakumar@gmail.com, Mob: 9585871780	Biotechnology
Dr. M. PANDIYAN Professor (PBG), Genetics and Plant Breeding Dr. M. S. Swaminathan Agricultural College and Research Institute, Tamil Nadu Agricultural University, Eachangkottai, Thanjavur, Tamil Nadu, India Mail: mpandiyan8@yahoo.co.in Mob: 9865173633	Genetics and Plant Breeding

INDIAN JOURNAL OF NATUREL SCIENCES (IJONS)
(BI-MONTHLY - PRINT)

POLICIES

OPEN ACCESS AND LICENSING

Indian Journal of Natural Sciences is loyal to open access for academic/research work. All the original articles and review papers published in this journal are free to access immediately from the date of publication. We don't charge any fees for any reader to download articles and reviews for their own scholarly use. The Indian Journal of Natural Sciences also operates under the Creative Commons Licence CCBY- NC-ND 3.0 (Creative Commons Attribution-Non Commercial - No Derivs 3.0 Unported). This allows for the reproduction of articles, free of charge, for non-commercial use only and with the appropriate citation information. All authors publishing with the IJONS accept these as the terms of publication.

The full terms of the CC BY-NC-ND licence are incorporated below and may also be accessed here: https://creativecommons.org/licenses/by-nc-nd/3.0/deed.en_US

ETHICS

Policies on Ethics, Conflict of Interest, Human and Animal Rights, and Informed Consent

Ethics

The publication of an article in a peer-reviewed journal is an essential building block in the development of a coherent and respected network of knowledge. It is a direct reflection of the quality of the work of the authors and the institutions that support them. Peer-reviewed articles support and embody the scientific method. It is therefore important to agree upon standards of expected ethical behaviour for all parties involved in the act of publishing: the author, the journal editor, the peer reviewer, the publisher and the society of society-owned or sponsored journals.

Conflict of Interest

Authors are required to disclose all sources of institutional, private and corporate financial support for their study. Donors of materials (for free or at a discount from current rates) should be named in the source of funding and their location (town, state/county, country) included. Other donors will be identified in the text. If no funding has been available other than that of the author's institution, this should be specified upon submission. Authors are also required to disclose any potential conflict of interest. These include financial interests (for example patent, ownership, stock ownership,

consultancies, speaker's fee,) or provision of study materials by their manufacturer for free or at a discount from current rates. Author's conflict of interest (or information specifying the absence of conflicts of interest) and the sources of funding for the research will be published under a separate heading entitled "Conflict of Interest and Sources of Funding Statement". Any experiments involving animals must be demonstrated to be ethically acceptable and where relevant conform to national guidelines for animal usage in research.

Human and Animal Rights

Medicine, Radiology, Pathology and Surgery encourages authors submitting manuscripts reporting from a clinical trial to register the trials registries & bear a clinical trial registration number and name of the trial. Authors must state that the protocol for the research project has been approved by a suitably constituted Ethics Committee of the institution within which the work was undertaken and that it conforms to the provisions of the Declaration of Helsinki. The Journal retains the right to reject any manuscript on the basis of unethical conduct of either human or animal studies. All investigations on human subjects must include a statement that the subject gave informed consent. Patient anonymity should be preserved. Photographs need to be cropped sufficiently to prevent human subjects being recognized or an eye bar should be used.

Reports of randomized clinical trials should present information on all major study elements, including the protocol, assignment of interventions (methods of randomization, concealment of allocation to treatment groups), and the method of masking (blinding), based on the CONSORT statement (Moher D, Schulz KF, Altman DG: The CONSORT Statement: Revised Recommendations for Improving the Quality of Reports of Parallel- Group Randomized Trials. Consent for Identifying Information if any identifying information is included in any part of the manuscript, you must obtain a written, informed consent from the patient and submit a copy of the document to the concerned Journal's Editorial Office.

PEER REVIEW (DOUBLE BLIND) POLICY

We are committed to prompt evaluation and publication of fully accepted papers in IJONS. To maintain a high-quality publication, all submissions undergo a rigorous review process. Characteristics of the peer review process are as follows:

- ☐ Simultaneous submissions of the same manuscript to different journals will not be tolerated.
- ☐ Manuscripts with contents outside the scope will not be considered for review.
- ☐ Papers will be refereed by at least 2 experts as suggested by the editorial board.
- ☐ In addition, Editor(s) will have the option of seeking additional reviews when needed.
Authors will be informed when Editor(s) decide further review is required.
- ☐ All publication decisions are made by the journal's Editor-in-Chief on the basis of the referees' reports. Authors of papers that are not accepted are notified promptly.

- ☐ All submitted manuscripts are treated as confidential documents. We expect our Board of Reviewing Editor(s) and reviewers to treat manuscripts as confidential material as well.
- ☐ Editor(s) and reviewers involved in the review process should disclose conflicts of interest resulting from direct competitive, collaborative, or other relationships with any of the authors, and remove oneself from cases in which such conflicts preclude an objective evaluation. Privileged information or ideas that are obtained through peer review must not be used for competitive gain.
- ☐ Our peer review process is confidential and identities of reviewers cannot be revealed.

PUBLICATION ETHICS AND MALPRACTICE STATEMENT

Section A: Publication and authorship

All submitted papers are subject to strict peer-review process by at least two international reviewers that are experts in the area of the particular paper. Reviewers are being selected by Editor in Chief or the committee formed by Editor. Author also can propose reviewers for some journals and article types.

1. The factors that are taken into account in review are relevance, originality, readability, statistical validity and language.
2. The possible decisions include acceptance, minor revisions, major revision or rejection.
3. If authors are encouraged to revise and resubmit a submission, there is no guarantee that the revised submission will be accepted.
4. Rejected articles will not be re-reviewed.
5. The paper acceptance is constrained by such legal requirements as shall then be in force regarding libel, copyright infringement and plagiarism.
6. No research can be included in more than one publication, whether within the same journal or in another journal.

Section B: Authors' responsibilities

1. Authors must certify that their manuscript is their original work.
2. Authors must certify that the manuscript has not previously been published elsewhere, or even submitted and been in reviewed in another journal.
3. Authors must participate in the peer review process and follow the comments.
4. Authors are obliged to provide retractions or corrections of mistakes.
5. All Authors mentioned in the paper must have significantly contributed to the research.

6. Level of their contribution also must be defined in the “Authors’ Contributions” section of the article.
7. Authors must state that all data in the paper are real and authentic.
8. Authors must notify the Editors of any conflicts of interest.
9. Authors must identify all sources used in the creation of their manuscript.
10. Authors must report any errors they discover in their published paper to the Editors.
11. Authors must not use irrelevant sources that may help other researches/journals.
12. Authors cannot withdraw their articles within the review process or after submission, or they must pay the penalty defined by the publisher.

Section C: Peer review/responsibility for the reviewers

1. Reviewers should keep all information regarding papers confidential and treat them as privileged information.
2. Reviews should be conducted objectively, with no personal criticism of the author. No self-knowledge of the author(s) must affect their comments and decision.
3. Reviewers should express their views clearly with supporting arguments in 500 to 1000 words.
4. Reviewers may identify relevant published work that has not been cited by the authors.
5. Reviewers should also call to the Editor in Chief's attention any substantial similarity or overlap between the manuscript under consideration and any other published paper of which they have personal knowledge.
6. Reviewers should not review manuscripts in which they have conflicts of interest
7. resulting from competitive, collaborative, or other relationships or connections with
8. any of the authors, companies, or institutions connected to the papers.

Section D: Editorial responsibilities

1. Editors (Associate Editors or Editor in Chief) have complete responsibility and authority to reject/accept an article.
2. Editors are responsible for the contents and overall quality of the publication.
3. Editors should always consider the needs of the authors and the readers when attempting to improve the publication.
4. Editors should guarantee the quality of the papers and the integrity of the academic record.
5. Editors should publish errata pages or make corrections when needed.
6. Editors should have a clear picture of a research's funding sources.
7. Editors should base their decisions solely on the papers' importance, originality, clarity and relevance to publication's scope.
8. Editors should not reverse their decisions nor overturn the ones of previous editors without serious reason.

9. Editors should preserve the anonymity of reviewers (in half blind peer review journals). Editors should ensure that all research material they publish conforms to international accepted ethical guidelines.
10. Editors should only accept a paper when reasonably certain.
11. Editors should act if they suspect misconduct, whether a paper is published or
12. unpublished, and make all reasonable attempts to persist in obtaining a resolution to the problem.
13. Editors should not reject papers based on suspicions; they should have proof of misconduct.
14. Editors should not allow any conflicts of interest between staff, authors, reviewers and board members.
15. Editors must not change their decision after submitting a decision (especially after reject or accept) unless they have a serious reason.

Section E: Publishing Ethics Issues

1. All editorial members, reviewers and authors must confirm and obey rules defined by COPE.
2. Corresponding author is the main owner of the article so she/he can withdraw the article when it is incomplete (before entering the review process or when a revision is asked for).
3. Authors cannot make major changes in the article after acceptance without a serious reason.
4. All editorial members and authors must will to publish any kind of corrections honestly and completely.
5. Any notes of plagiarism, fraudulent data or any other kinds of fraud must be reported completely to COPE.

ANTI-PLAGIARISM POLICY

Indian Journal of Natural Sciences (IJONS) regards plagiarism as a very serious offence. It is an illegal form of copying. Plagiarism is defined as the unacknowledged use of the work of others as if this were your own original work.

Examples of plagiarism

- Copying and pasting from the Internet and posting somewhere else without proper citation
- Putting your name on another person's essay or project
- Copying exact wording from another person's text
- Using another person's photo, diagram, tables, sounds, or ideas without proper Citation
- Presenting research in your own words without providing references

- Purchasing another person's text and using it as your own
- Presenting ideas in the same format and order as your research source

By submitting paper for publication to the journal, Author(s) certify that:

- I/We are fully aware that plagiarism is wrong
- I/We know that plagiarism is the use of another person's idea or published work and to pretend that it is one's own.
- I/ We declare that each contribution to your project from the work(s) of other peoples published works or unpublished sources have been acknowledged and source of information have been referenced.
- I/We certify that you are solely responsible for any incomplete reference that may remain in my/our work.

Anti-plagiarism declaration

I have read and understood the IJONS rules on plagiarism. I hereby declare that this piece of written work is the result of my own independent scholarly work, and that in all cases material from the work of others (in books, articles, essays, dissertations, and on the internet) is acknowledged, and quotations and paraphrases are clearly indicated. No material other than that listed has been used. This written work has not previously or not yet been published.

Tips for Avoiding Plagiarism

- Learn the citation expectations for each course.
- When you take notes for a paper, be sure to cite sources so you don't get mixed up later.
- When you research online, be sure to find the original source of the information (Many Websites Plagiarize).
- If you are really worried, ask your prof. if you can submit a rough draft so she /he can check your citations.
- When in doubt, cite! It is better to have too many citations than few.

AI GENERATED CONTENT POLICY

Indian Journal of Natural Sciences (IJONS) has an exacting policy on AI generated content in research manuscripts. Authors are instructed to ensure that the research manuscript which would submit for the publication should be unique and innovative. The publishers and editors are not responsible for any abuse and it is clearly announced that authors are fully responsible for their manuscript.

Authors are insisted to disclose the use of artificial intelligence (AI) tools in the preparation of manuscript. It should not be in the form of AI generated and assisted text, images, tables,

graphs, data interpretation and language modifications. Failure to disclose AI assisted content will be deemed a violation of research ethics and your manuscript will not be considered for publication. The Journal does not validate the usage of AI contents in the manuscript and if the AI content would be identified in the manuscript, the authors are sole responsibility. It is informed that the AI tool will not be accepted as an author and it is clearly stated that authorship must be given only to the human contributors. All authors in the manuscript are insisted to acknowledge their involvement in the preparation of manuscript. The corresponding author must ensure that no AI generated contents in the manuscript and it is not represented for human work.

It is clearly instructed that the publisher and editorial board are not responsible for AI generated content in submitted manuscripts. The full responsibility of the corresponding author is to ensure that AI generated content does not include in factual inaccuracies, Biases, Plagiarism and data manipulation. Authors are sole responsible for any errors or misinformation arising from AI assistance. Indian Journal of Natural Sciences will not accept AI errors and it will be considered as an ethical violations.

Immediate withdrawal

If the manuscript is detected to hold undisclosed or unethical AI generated content, it will be immediately removed from the journal website, without any reconsideration.

Author Suspension

The authors are strictly instructed that if the violation of AI content will be found in the manuscript and it would be barred from publishing in the journal for one year. During this period, they will not be permitted to submit any manuscripts.

Permanent Black listing of authors

Repeated violations will results in permanent blacklisting for the authors from submitting manuscripts to IJONS.

Indian Journal of Natural Sciences (IJONS)
(Bi- monthly – Print)

Volume XV (15)	ISSUE 89	April 2025
CODEN: IJONS (89) (2025)		ISSN: 0976 - 0997

S. No.	CONTENTS	Page No.
001	First Record of Edible Moth <i>Antheraea assama</i> and its Nutritional Composition Mallika Gogoi and Jharna Chakravorty	90494-90498
002	A Systematic Survey of <i>Molluscan fauna</i> in an around Nagapattinam Coastal Area in Nagapattinam District, Tamil Nadu, Southern India R. Vallipriyadharshini and T. Sumathi	90499-90507
003	Physicochemical Evaluation and GC-MS Analysis of Infused Oil from Medicinal Plants – <i>Mangifera indica</i> L. and <i>Piper betle</i> L. Leela .K and Anita R J Singh	90508-90514
004	A Comprehensive Review of Limonene: Exploring its Biosynthesis, Ecological Impact and Aromachological Aspects Nissam Sainudeen, Divya Vattoly, N. Yogananth and M. Syed Ali	90515-90522
005	Evaluation of Antibacterial Activity and Bioactive Compounds in <i>Solanum trilobatum</i> Extracts S. Megala, S. R. Paranthaman, P. Poonguzhali, P. Saranraj and T. Sheela	90523-90532
006	Phytochemical Screening and Evaluation of Anti-Proliferative Effects of <i>Mukia maderaspatana</i> in MCF7 Cell Lines R. Sharmila, Neelaveni, Sherin Rebecca , Vanmathi Vidhyashini and Anita Margret	90533-90540
007	Phytochemical and Spectroscopic Characterization of <i>Millingtonia hortensis</i> L.f. Flower with Antibacterial Activity Assessment S. Parama Sakthi and S. Gomathy	90541-90550
008	Review on Yellow Spotted Millipede <i>Harpaphe haydeniana</i> K. Vijaydharssani and Horne Iona Averal	90551-90555
009	Metagenomics and Fungal Identification: Exploring Fungal Diversity through Genomic Insights Ruchi Yadav	90556-90566
010	Exploring Antibacterial and Antioxidant Properties of Nanoceria Synthesized from <i>Tamarindus indica</i> Fruit Shell Extract for Biomedical Applications V. Sakthivel, E. Komathi and K. Sheela	90567-90575
011	Evaluating Medicinal Plant Importance and Community use Patterns in Korampallam Village, Thoothukudi District, Tamil Nadu Pauline Jenifer. S and Beulah Jerlin. S	90576-90585
012	Bio prospecting of Crustaceans gut Bacterial Flora from the Coast of Bay of Bengal, Chennai, Tamilnadu Gomathi.M, Krishnaraj.M, Aruna.S, Priyadharshini.G, Bhoomika Sharma, Shanmuga Priya. R	90586-90598

013	Toxicity Study of Red Marine Alga <i>Gracilaria salicornia</i> (C. Agardh) from the Tamil Nadu Coastal Ecosystem against the Rice Leaf Folder, <i>Cnaphalocrocis medinalis</i> (Guenee) Priyanka .K, Rajaguru .S and Kannan .R	90599-90605
014	An Ethnobotanical Survey of Medicinal Plants in Marudhur Village, Karur District, Tamil Nadu, India C. Venkata Lakshmi, M. Bhuvaneswari, M.Periyasamy, C. Ravinder Singh and C. ChitraVadivu	90606-90614
015	Nutritional Interventions in Managing Behaviours of Children with Autism Spectrum Disorder- A Literature Review A. K. Umera Begam and G. Sasikala Hephzibah	90615-90623
016	Impact of Wildlife Trafficking and Poaching on Tiger (<i>Panthera tigris</i>) Population in India: A Comprehensive Review Kaji Mainuddin, Monisha Mondal , Souradypta Paul, Amrita Das Gupta, Avirupa Chatterjee and Dipanwita Datta	90624-90630
017	Isolation and Characterization of Triphenylmethane Decolorizing Bacteria Gowri Subramanian, Rizelia C. Rodrigues and Padmashree Kulkarni	90631-90641
018	A Study on Knowledge of Pineapple Growers under the Recommended Package of Practices in Cultivation in Manipur State Nongmaithem Gyaneshor Singh, R. Muthukumar and D. Velmurugan	90642-90650
019	The Effect of Bowen Technique and Neurodynamic Sliders to Promote Flexibility in Hamstring Tightness in Asymptomatic College Students Surendhar Mohan, Prathap Suganthirababu and Maheswaran K Ravikumar	90651-90658
020	EARAA – A Machine Learning Approach to Energy Optimization in 5G and IoT Networks Soumya Roy and Gouranga Bag	90659-90667
021	An Astrological Insight on Ayurved Bhumi Lad and Akshar Ashok Kulkarni	90668-90674
022	<i>Plectranthus barbatus</i> Andrews: Unveiling the Phytochemical Symphony and Advancing Molecular Barcoding for Reliable Identification in Herbal Products Mohitgiri A. Goswami, Manish L. Vekaria, Virendra J. Patel, Vrinda S. Thaker and Hiteshkumar A. Solanki	90675-90689
023	Innovative Sublingual Antihypertensive Tablets: A Quality by Design Approach Ishan Dubey, Raksha Goswami, Deepak Kumawat, Rashi Agrawal, Muskan Jain and Khushboo Sharma	90690-90698
024	Immediate Effect of Dynamic Stretching and Active Release Technique (ART) on Sit and Reach, in a Patient with Calf and Hamstring Tightness –A Comparative Interventional Study Arya Nandalal Dadhaniya, Himashi Harshadrai Ruparelia and Ashish Dhirajlal Kakkad	90699-90703
025	Just the Tip of the Iceberg: Nutritional Assessment and Management of Hyperglycemia during Carcinoma of Stomach – A Case Report Soma Basu and A. J. Hemamalini	90704-90708

026	Literary Comparative Analysis of Cow, Goat, and Buffalo Curd: Ayurvedic Perspectives on Nutritional Composition and Therapeutic Potential Bharat Patil , Vaidehi Raole and Ashwini Patil	90709-90714
027	Appraisal of Feasibility of BRTS Route in Lucknow AR. Shagufta Irshad, Indrani Chakraborty, Subhrajit Banerjee and AR. Gaurav Singh	90715-90724
028	Physico-Chemical Dynamics and Microplastic Contamination in Mysore's Kukkarahalli and Dalvoy Lakes Ashashree .N .R and Raju .N .S	90725-90733
029	Scanning Electron Microscopic Changes in the Fat Body of Adult Male <i>Sphaerodema rusticum</i> (Heteroptera : Belosmatidae) Treated with Chromium B. Babitha, V. Rajathi and S. Sankar Samipillai	90734-90740
030	Production and Characterization of Xanthan Gum from Agro-Industrial Waste Mansi Mulani, Tulsi Prajapati and Smita Parekh	90741-90751
031	Systematic Significance of Anatomical Characterization on <i>Cleome</i> Species of the Family Cleomaceae P.Sathishkumar, J. Logeshwari, R. Rakkimuthu, A.M. Ananda Kumar and D.Sowmiya	90752-90760
032	Preliminary Studies on Migratory Status and Seasonal Distribution of Birds of Majathal Wildlife Sanctuary, Himachal Pradesh, India Navneet Kaur, Harinder Singh Banyal and Jyoti Thakur	90761-90769
033	A Pilot Study on the Correlation between Cheilosopic Patterns and Ayurvedic Prakriti : A Randomised Open-Label Analysis Riya Joy, Dattu Narayanrao Bandapalle and Amal Thomas	90767-90779
034	Synthesis and Spectral Hammett Correlation Study of Some Substituted 2-Benzylidene-1-Tosylhydrazines V. Manikandan, R. Arulkumaran, R. Sundararajan, K. Ranganathan, P. Christuraj, I. Muthuvel, V. Usha, V. Sathiyendiran and G. Thirunarayanan	90780-90788
035	Effect of Two Geomagnetic Storms on TEC at EIA Region Bhopal during the Ascending Phase of the 25 th Solar Cycle Amita Pal, Richa Trivedi, Amit Jain and Sudhir Jain	90789-90800
036	Hydrochemical Evaluation of Ground Water from Basaltic Terrain in Aundha Nagnath Tehsil of Maharashtra through WQI and GIS Approach Vaishnavi Raut, Vasant Wagh, Kartik Tadse and Uday Sahu	90801-90811
037	Intrusion Detection System using Spiking Neural Networks with Temporal Encoding and STDP Learning R. Eswin Pria Angel, R.C. Evangeline and P. Raviraj	90812-90817
038	Screening Models and Phytoconstituents for Antidepressant Activity: A Comprehensive Overview Vivek T. Kumbhar, Sanganna C. Burli, Prashant S. Kumbhar and Vikas R. Dhole	90818-90829
039	Assessment of Quality of Life in Cegana Vaatham (Cervical Spondylosis) Patients undergoing <i>Varmam</i> Therapy Sasikumar .E, Muthukumar .N .J, Samundeswari .P and Nivetha .G	90830-90836

040	The Health Benefits of Ascorbic Acid in Management of Several Diseases : A Narrative Review Luxita Sharma and Dhananjay Sharma	90837-90844
041	Comparative Evaluation of Remaining Dentin Thickness and Time Required for GP Removal using Two Different Retreatment File Systems : An <i>In-vitro</i> Study Mukund V Singh, Rutuja Dhole and Aparna Palekar	90845-90850
042	Survey on Deep Learning based Tampering Detection Techniques for Secure Image Manipulation S. Karpagadeepa and P. Sumathi	90851-90858
043	Transdermal Drug Delivery System for Treatment of Hypertension Harsha H. Tarare, Divya S Chatur, Laxmikant B. Borse and Amit Gaikwad	90859-90869
044	Preliminary Phytochemical Exploration and FTIR Characterization of the Moss <i>Himantocladium plumula</i> (Nees) M. Fleisch Jerry C. Jacson and Remya Krishnan	90870-90875
045	A Strategic Approach to QMS Compliance: Insights Gleaned from FDA Warning Letters Deepika and Koushik Y	90876-90886
046	Agri-Tourism and Sustainable Farming: A Synergetic Approach for Rural Development and Environmental Conservation Varanasi Rahul, Rachana Saxena, Charu Agarwal and Deepak D	90887-90893
047	Accessorial Nuisances by Avian Species at open Dumping Site: A Case Study Sauvik Bose, Rina Bhattacharya and Rajeshwari Roy	90894-90899
048	Economic Empowerment of Women and Sericulture : A Socio-Economic Study of Ranibandh Block of Bankura District, WB, India Pragati Patra, Subhajit Mahanty, Anupam Ghosh, Ulfat Khan, Surajit Majumder and Rajendra Prasad Mondal	90900-90909
049	Data Envelopment Analysis for Estimating Efficiency of Hospitals: A Comparative Study using CCR and BCC Models Manish Sharma, Sufia Aziz and Smita Verma	90910-90917
050	Inclusive Survey Regarding Image Tampering using Deep Learning Techniques Prince Joy and B. Jayanthi	90918-90924
051	Role of <i>Ocimum basilicum</i> in the Management of Diabetes and Cardiovascular Diseases - A Systematic Review Debasrita Banerjee and Luxita Sharma	90925-90935
052	An Open Clinical Evaluation of Vasambu Patru (Semi-Solid Polutice) in the Management of Azhal Keelvaayu (Osteoarthritis-Knee) - A Pilot Study A. Adlin Reshma, M. Arun Prasath, M. Nivetha Priya and M. Kannan	90936-90942
053	Efficacy of Commercial Soaps in Inhibiting Skin Pathogens: An Agar Well Diffusion Study Shrikant Yadav, Laxmi Yadav, Neetu Mehta, Mukul Mudgal, Sandeep Yadav and Madhuri Garg	90943-90948

054	A Study on Urinary Tract Infections among Adults in Western Uttar Pradesh Angela Laldinpuii Renthlei, Anshu Kumar Singh, Zeba Maj Umesh Kumar Meenakshi Mishra and Pankaj Kishor Mishra	90949-90957
055	Traditional Knowledge of Medicinal Plants Survey in Paruthivilai Village, Nagercoil, Kanyakumari District, Tamilnadu, India. E. Santhiya and R. Mahesh	90958-90965
056	Case Study of Apasmara- Specific Effect of Panchgavya Ghrita with Conventional Treatment Chitranjan Sharma and Vijay Bhagat	90966-90972
057	A Breakthrough in Treating Tuberculosis - BPaLM Regimen K. Purna Nagasree, J. Jainam, B. Surekha and K. Swathi	90973-90986
058	Innovative Approaches to Kidney Disease Detection via Automated Urinalysis Vishant Pal, Shivani, Rahul and Akash Kumar	90987-90993
059	Some New Types of Nano Closed sets in Nano Topological Spaces A. Amala Priya	90994-90999
060	Effect of Structured Teaching Programme on Knowledge Regarding Triage among 4 th Year B.Sc. Nursing Students in a Selected Nursing College, Guwahati, Assam Smita Limbu and Yumnam Chanu Superior	91000-91006
061	Anemia among Women of Northeast India in the Reproductive Age : A Cross - Sectional Analysis of the Trends and Determinant Factors Sabrina Sultana Rahman and Ruma Talukdar	91007-91017
062	Modelling and Forecasting Rice Production Volatility: A Threshold Auto Regression (TAR) Approach for Predictive Insights Kesavulu Poola, Sahana B S, Sakthi Kamal Nathan and Sachin K Parappagoudar	91018-91026
063	Dynamics of an Influenza Epidemic Model with Vaccination and Treatment A. Venkatesh, K. Arun Kumar, M. Prakash Raj and M. Manivel	91027-91039
064	Eco-Friendly Beauty : A Review of Herbal Cosmetics M. Priyadharshana	91040-91047
065	Petrogenesis and Geochemistry of Dolerite Dykes in Ranipet District, Northern Part of Southern Granulite Terrain, Tamil Nadu, India S. Rameshkumar, A. Thirunavukkarasu, C. Ramachandran, C. Sakthivel and C. Kasilingam	91048-91062
066	Advanced Thermal and RGB Fusion for Animal Classification : A Deep Learning Approach K.Chinnaraju and K.Prabavathy	91063-91067
067	Therapeutic Efficacy of Punarnavadi Yoga Basti in The Management of Benign Prostatic Hyperplasia: A Case Study Kashyap K. Patel, Aswin Haridas, Akhi Radhakrishnan and Dhairyjeetsinh Gohil	91068-91074
068	Face Recognition System for Real-time Attendance Monitoring using Open CV N Krishnamoorthy and Anubhav Lal	91075-91082

069	A Review on Environmentally Responsible, Efficient and Sustainable Methods for Investigating Natural Dye as a Green Material and its Nature to Textile Dyeing Naveen Kumar and Shyam Vir Singh	91083-91094
070	Effect of Symptoms Limited Exercise Training on Functional Status and Maximum Oxygen Consumption in Patients with Non-Operated Stable Coronary Artery Disease - A Pilot Randomized Controlled Trial Brijesh Acharya and R. Harihara Prakash	91095-91102
071	Impact of Social-Economic Conditions by Weekly Markets in Improving Sustainability among Rural Villages in Kanchipuram District of Tamilnadu V. Vinuchakravarthi, A. Vikraman, S. Gayathri and S. Srinivasan	91103-91109
072	Breast Cancer Mammogram Image Classification using Transfer Learning Garima Charan and Jyoti Lakhani	91110-91117
073	The Mediating Effect of Marital Adjustment and Social Support on the Relationship between Partner Abuse and General Health C. Lalfamkima Varte, C. Lalfakzuali and Sunaina Subba	91118-91125
074	Signature Forgery Detection using Neural Networks Pranay Sharma, Sanket Kisan Chavhan, Lekshmi Kalinathan, Marimuthu Marimuthu and Saravanan Palani	91126-91135
075	Resilience and Recovery of Micro, Small, and Medium-sized Enterprises (MSMEs) Post-Natural Disasters: A Systematic Literature Review Sushant Kumar, Kapil Lakhera and Radha Tripathy	91136-91152
076	Prediction of Chronic Kidney Disease using Machine Learning Vinitha Bodla, Yerram Dharshitha, SomanpallyVinay and V. Rajasekhar	91153-91157
077	Ayurvedic Management of Oligoasthenospermia - A Case Study Janki R. Bopaliya, Vaidehi V. Raole and Dharmendra Dhoriyani	91158-91165
078	A New Area-Biased Remkan Distribution with Properties and its Applications O. Anu and P. Pandiyan	91166-91175
079	On Interval-Valued Closed Sets and their Generalizations in Interval-Valued Topological Spaces S. Dijitha and M. Navaneethakrishnan	91176-91183
080	Seizing Nutritional Status : The Underexplored Impact of Epilepsy Soma Basu, Ranjith Kumar Manokaran and A. J. Hemamalini	91184-91188
081	A Novel Methodology for Assessing Teachers' Perception of Students' Blended Assessment Shivali Verma and Aman	91189-91200
082	<i>In vitro</i> Evaluation of Antioxidant and Anti-Inflammatory Activities of Date Palm Fruit Extract : Potential Therapeutic Implications M.Mahesh Yadav, Fatima Sanjeri Dasankoppa, Kamaladevi Kshatriya, Hasanpasha N Sholapur, Pranav B Patil and Rohan Ravsaheb Latwade	91201-91211
083	Influence of Cereus repandus Stem Extract on the Corrosion Inhibition of Mild Steel in 1N HCl Solution and Quantum Chemical Approach S. Gladiyarani and N.Gunavathy	91212-91218

084	Assessment of Pesticide Residues in Soil of Agricultural Fields at Nanjangud Taluk of Mysore District, Karnataka, India Bharath M and Raju N S	91219-91223
085	Koch's Spine : A Complex Case of Extra Pulmonary Tuberculosis with Multisystem Involvement Y. Pavan Kumar, Yati Raj, Jakkula Supriya, V. Hema Ratna Sai Lakshmi and Praveen Sana	91224-91229
086	A Verification Method of Human Identification using Bite Marks based on the Improved Inception V4 Model Sonali Ajay Mohite, Bhavana Narain and B. T. Jadhav	91230-91237
087	Advancing Liposomal Therapeutics: Breakthroughs, Barriers and Opportunities - A Review Amrita Nayak, Harsh Ker Sharma, Yogesh Rai, Mohit Panigrahi and Ashish Nag	91238-91247
088	Behavioral Shifts in Remote Work and their Environmental Implications: A Natural Sciences Perspective Shalini Acharya, Uma C. Swadimath and Ishita Gopi	91248-91258
089	Quadrilateral Route Factor Assessment in Manet M. Kundalakesi, S. K. Badhrinarayanan, E. P. Manoj and B. Kabil	91259-91269
090	Travel Time Analysis on a Road Network of Signalized Intersection Bhargav H. Jaiswal, Neelkanth Bhatt and Harishkumar Varia	91270-91280
091	A Study of the Relationship between Social Media use and Stress in Young Adults Deepanshu and Shonali	91281-91287
092	A Review on: The Deadly Disease in Pediatric Sporadic Caused by CHPV Encephalitis due to Temperature of Climate Variability Nisha Retrekar, Gaurav Agrawal, Gaurav Sarsodia, Ritesh Patel, Ayushi Jain and Deepika Bhawsar	91288-91295
093	Union Cordial Labeling of Tree Related Graphs P. Hameetha Begum, M. Amirthakodi and S. Akila Devi	91296-91300
094	Assessing Depression and Gastro-Intestinal Problems in Post Bariatric Surgery Subjects Post 1-Month of Surgery Kinjal Trivedi, Madhavan Iyengar and Bhavana Gadhavi	91301-91307
095	Optimizing Aspect - based Sentiment Analysis for Code-Mixed Gujarati Texts : Methodological Innovations and Practical Applications Shyam Viththalani and Krunalkumar Patel	91308-91317
096	Effect of Complex Training on Physiological Variables of Team Game Players of CUPB M. John, Wise Blessed Singh, K.V Balamurugan and W. Vinu	90318-91322
097	A Comprehensive Review of Vitamin D Deficiency Conditions in Clinical Practice: Diagnosis, Treatment, and Prevention Soumya P.V, Anumol, Kripa K.B and Riya Fathima V.S	90323-91330
098	Using Graphic Organizer to Develop Metacognitive Awareness in Mathematics Class Room of Elementary School Students Rekha Dhyani	91331-91335

099	Optimized Deep Learning - based Electrical Fault Detection in Power Transmission Grids C. Daxayani and N. P. Ananthamoorthy	91336-91345
100	Application of Intuitionistic Fuzzy Multi-Objective Linear Programming of Fuzzy Optimization Techniques in Agriculture R. Bharathi and T. Geetha	91346-91353
101	A Study on the Effects of the COVID-19 Caused Shutdown has on the Workers the Leather Processing Sector in South Asia MD Bilal KV and S.Allah Baksh	91354-91362
102	The Relationship between Severity of Dysmenorrhea and Menstrual Characteristics among Deaf and Mute Girls Jagdish T Gohil and Neelam K Rathod	91363-91369
103	Exploring Marketing Strategies for Fertilizer Adoption in Developing Countries : A Secondary Data Perspective Sudam B. Shinde, Nitin B.Wable and Rahul K. Khandelwal	91370-91376
104	Repurposing of Diabetic Drug to Treat Parkinson 's Disease G.Vasanth, Jaldur Sai Sindhu, Gondesi Srinidhi and Meda Jhansi	91377-91383
105	A Study on Psychological Counselling Needs for Class 9th Students Pooja Shukla and Hariom Chauhan	91384-91388
106	Food Quality Monitoring Arjun Bambhaniya, Deepak Vala and Jagdish Rathod	91389-91394
107	Energy Assessment and usage Prospect of Renewable Energy Resources at Anandabag Tea Estate Pranjal Sarmah, Elora Baruah, Dipankar Das, Surendra Kumar Yadav, Virendra Kumar and Partha Protim Borthakur	91395-91403
108	Selecting Nutrition and Diet for Toddlers with Iron Deficiency using a Neutrosophic Hypersoft Matrix P. Vithya and R. Sophia Porchelvi	91404-91411
109	Assessment of Health - Seeking Behavior and its Barriers among Women with Breast Cancer Mogana Priya B, Pravin Kumar M, Lakshana K, Vanitha Rani N, Bhawna Dev, Venkatesan Singaram and Jayasutha Jayram	91412-91418
110	Effect of Muscle Energy Technique Along with Strengthening Exercise on Shoulder Function and Scapular Position in Upper Cross Syndrome Maheswaran K R, Surendhar Mohan, Surya Vishnuram and Senthil Kumar N	91419-91430
111	Successful Ayurvedic Management of Granulomatous Vocal Cord Lesion - A Case Study Chaya .C and Jyoti	91431-91435
112	An Overview of Hazard Analysis Critical Control Points Kirthika Ravi, Akshaya Kumaravel, Mohamed Anas Abdul Rahim and R.Jasmin Sajini	91436-91449
113	A Mathematical Investigation of the Improvement of Heat Transport through a Variety of Nanofluids Shilpi Saraswat and Rajesh Johari	91450-91456

114	Multidimensional Benefits of Digitalisation in Organised Retail: Insights from Kerala's Diverse Ecosystem Ninikala .K	91457-91467
115	Decoding the Consumer Change to Herbal Products : An Analytical Approach G.Uma and G.L.Hariharan	91468-91473
116	Shadow Education: A Theoretical Exploration of Private Tutoring and its Implications for Equity and Access in Global Education Systems Sachin Kumar, Poonam Pandita and Kiran	91474-91486
117	Standardization of Vaazhai Pazha Jayaneer and Evaluation of its Anti-Bacterial Property against Urinary Tract Infection (<i>Neerchurukku</i>) Causing Pathogens P.Shanmugapriyan, R.Suresh, T. Senthana, S. Sudha Revathy and R. Meenakumari	91487-91493
118	Social Media Influence Maximization using Convolutional Neural Network and Recent with Graph Neural Networks A. R. Karthekeyan, R. Saveetha and S.Deepika	91494-91504
119	Suicide Investigations through Psychological Autopsy: Trends and Future in Forensic Science Souvik Dhar, Ayush Jha and Ankita Rituraj	91505-91513
120	Assessing the Therapeutic Potential of Balyadi Lepa and Kanji: A Pharmacodynamic Approach Hemangini Malivad, Omprakash Dave and Hitaba Gohil	91514-91520
121	Ergonomic Factor based Analysis on Characteristics of Quality Work Life among Office Workers Rashmi R and Bhavya Vikas	91521-91532
122	An Analysis of Diabetes Awareness among Truck Drivers in Delhi NCR (National Capital Region) Anand Chinnakaran, K. Maharajan and Beena Antony Reji	91533-91537
123	To Check the Awareness and Practice in Pregnant Woman for Infant Oral Health and Self-oral Hygiene Vidushi Sheokand and Anshu Blaggana	91538-91541
124	Notes on Plithogenic Fuzzy M-Subgroup of an M-Group and its Applications P. Pandiammal and J.D. Sundari	91542-91557
125	Functional Recovery in Adolescent Transverse Myelitis through Combined Functional Electrical Stimulation (FES) and Exercise Therapy: A Case Report Stephy Angel M, Sarulatha Haridas and Anjali Suresh	91558-91567
126	Performance Evaluation of Numerical Estimation Methods to Obtain the Weibull Parameter in Wind Energy Assessment in Kolkata City Syed Mujibur Rahman, Mafidur Rahman and Himadri Chattopadhyay	91568-91574
127	A Bibliometric Analysis of Fintech with Reference to Digital Payment: An Empirical Investigation Jayendra P. Siddhapura and Chitralkha H. Dhadhal	91575-91579

128	A Cryptographic Technique Utilizing Trigonometric Ratios Enhanced by Hankel Transformation Divita Sharma, Sarswati Modi, Priyanka Sisodiya and Nidhi Deshmukh	91580-91586
129	Hyaluronic Acid in Dentistry : A View Point Gowri Pendyala, Saurabh Joshi and Amit Mani	91587-91593
130	A Comparative Analysis of Employee Psychological Contract in Manufacturing vs IT and ITES Companies Santhosh K V and Bhavya Vikas	91594-91602
131	Examining the Influence of ICT on Teaching and Learning Practices in Indian Higher Education: Navigating Challenges and Opportunities Basudeb Jana, Tapas Giri and Srikanth HG	91603-91613
132	Deteriorating Assets Quality and its Impact on Wealth Creation of Shareholders with Reference to SBI Jagadish. H and Shivakumar. S	91614-91621
133	Exploring the Integration of Environmental Sustainability in Teaching Practices among Teachers of Higher Education Institutions Sangeeta Chauhan, Sonu Bara, Michael Tarance Suraj and Prashant Kumar Astalin	91622-91632
134	An Observational Analysis of <i>Snayu</i> : A Focus on <i>Shakhagata Pratanvati Snayu</i> w.s.r. to Upper limb Avani Patel and Dattu Narayanrao Bandapalle	91633-91639
135	Minus Ordering in Ternary Semiring T. Pandiselvi and S. Anbalagan	91640-91646
136	Total Graph and Total Burning Komala .S and Mary U	91467-91650
137	Green Synthesis of Magnesium Oxide Nanoparticles using Neem Leaves and their Antimicrobial Activity S. Aron Rabi, A.T.Ravichandran and A. Joseph Sagaya Kennedy	91651-91657
138	Sustainable Branding and Consumer Perception: An Overview in the Indian Context Boregowda M A	91658-91665
139	Advanced Time Series Analysis and Forecasting with ARIMA Models Prakruti D. Dave and Hiren S. Lekhadiya	91666-91671
140	Restoring Cervical Health : An Ayurvedic Perspective on Cervical Erosion Yatri Kanubhai Thakker and Mauli Vaishnav	91672-91678
141	Groundwater Pollution in West Bengal: Challenges and Solutions to Arsenic Contamination Paramita Bhattacharyya	91679-91685
142	Analytical Method Development and Validation by High Performance Liquid Chromatography (HPLC) Ashwini Waghchaure and Sharmila Naykar	91686-91695
143	Exploring Sustainability and Profitability: A Systematic Review of Environmental, Social and Governance Factors Vasudha Srivatsa and Bhavya Vikas	91696-91720

144	Sustainable Production Inventory Model with Different Demand Patterns A. Theeba and Nivetha Martin	91721-91733
145	Molecular Docking Studies of Phytoconstituents from Seeds of <i>Syzigium cumini</i> as Potential Inhibitors of Targets of Diabetes Mellitus Bhaghyashri Adalinge, Vrushali Tambe, Vijaya Vichare and Ketaki Bagul	91734-91743
146	Analysis of Organizational Culture on Gender Equality in Promotions - A Quantitative Study P.K.Anjani	91744-91749
147	Study of Incongruent Upshot of Nanosphere Technology and its Relevance Kad D.R, Asvitha Baskar, Anjali Thakur, Gayatri Harke, Rakhi Mohite and Dnyaneshwari Kale	91750-91762
148	Plithogenic Decision Making with Different Linguistic Contradiction Degrees Representations P.Sathya and Nivetha Martin	91763-91777
149	Analysis on Key Components of Effective Micro-Mentoring - Employees Perspective R. Anand and R Deepa	91778-91788
150	Thermal Performance Analysis of a Traditional Mud House: A Case Study in the Rural Fringe of Lucknow, India Khurram Ashraf, Zeba Nisar and Shweta Verma	91789-91796
151	Ayurvedic Therapeutic Approach in the Management of Chronic Venous Ulcer: A Case Report Niket Gami and Vidya G Mohan	91797-91803
152	Micro Vague Generalized Semi Closed Sets in Micro Vague Topological Spaces Vargees Vahini T and Trinita Pricilla M	91804-91817
153	Mapping the Landscape of Government Policies and Electric Vehicles: A Bibliometric and Visualization Analysis Simran Sehgal and Divya Malhan	91818-91836
154	A Study on Innovations in Indian Agricultural Finance Ananth Kumar and Muralidhar L B	91837-91843
155	Pair Mean Cordial Labeling of Pizza Graph, Snail Graph, Sun Graph and Kusudama Flower Graph R. Ponraj, S. Prabhu and M. Sivakumar	91844-91851
156	Surface Coated Implants : Enhance Early Osseointegration Shalini Kapoor, Amit Bhardwaj and Viyanti Wadhwa	91852-91860
157	Artificial Intelligence (AI) and its Impact on Online Shopping Consumer Behaviour with Special Reference to Bengaluru Merlyn Preethi B, Pushpa H S, M U Shreya and Kaushik Raj N	91861-91873
158	The Effectiveness of Mirror Therapy Versus Action Observation Therapy to Improve Upper Limb Motor Function in Sub-Acute Stroke - A Comparative Study Ranjit Tiwari and Sonia Lakhotia	91874-91880

159	Regulatory Challenges in Approval of Paediatric Vaccines A. Ashish and Y.Koushik	91881-91892
160	Nanoemulgel - based Delivery of Leflunomide: A Review of Therapeutic Potential for Rheumatoid Arthritis Sonu Choudhary, Pradeep Pal and Vikas Jain	91893-91906
161	Nutritional Composition, Health Benefits and Culinary Applications of Quinoa Aarzoo Singh and Govind Ballabh Bhatt	91907-91916
162	AI Driven Workforce Planning: Exploring Talent Acquisition and Optimization - HR Decision Paradigm for a New Strategy Shareefa Bhanu and Annette Christinal	91917-91925
163	Monitoring and Enhancing Awareness of River Water Quality and Pollution through IoT using AWQDA Algorithm G. Karthikeyan, J. Ramprasath, A. G. Priya Varshini and N. Krishnaraj	91926-91932
164	IPL 2024: Unveiling the League Winner through Machine Learning Techniques Abarnaa.R and R.N.Sivakasini	91933-91937
165	Ayurvedic Management of Dusta Vrana w.s.r Pressure Ulcer [Bed Sore]: A Single Case Study Hemangini S. Malivad and Omprakash Dave	91938-91945
166	Arduino based Rescue System with GPS Alerts for Women's Safety using Proteus Swati Barui, Pranab Hazra, Kaushik Sarkar, Geetika Pal, Sreya Biswas, Pritam Roy and Riya Kumari	91946-91950
167	Interval Valued Bipolar Intuitionistic Fuzzy Ideal and Fuzzy α -Ideal of a BP-Algebra S.Sivakaminathan, B.Vasudevan and K.Gunasekaran	91951-91960
168	An Overall Assessment of the HVAC System for Cleanroom Validation Gayatri S, S Gowtham and S. Sumetha	91961-91966
169	Topological Indices of Dutch Windmill (m-fan) Fuzzy Random Graph R. Abirami and N. Sarala	91967-91975
170	Kala in Ayurveda: A Comprehensive Study of Membranes and their Functions Mahendra and Nirav Patel	91976-91981
171	A Review Focusing on Recent Advancements in LCMS Instrumentation, Software and Methodologies for Enhancing Method Development Efficiency, Sensitivity and Selectivity Sridevi Ranjitha Karanam, Anil Kumar Kallepalli, Varaprasada Rao Kollabathula, Doddi Shanmukha Rithika and Gaddam Vandana	91982-91989
172	The Impact of Gender in Influencer Marketing: A Study of Brand Awareness in the Fashion Sector Ayash Manzoor, Iqbal Ahmad Hakim, Bilal Farooq, Waseem Ahmad Bhat and Hanan Parvaiz Kochey	91990-92001

173	Honey Preserve Dosage form of Internal Medicinal Drug in Siddha A.Elavarasi, K. Velmurugan and C. Parkavi	92002-92007
174	Unveiling the Ethnomedicinal Significance of Plants Utilization among Tribal Communities in Southern Pali District, Rajasthan, India Sariika, Dinesh Hans, Priyanka Choudhary, Kuldeep Kumar Kumawat	92008-92019
175	Evaluating the Contribution in Financial Literacy in Influencing Investment Behaviour amongst Millennial Trendy Bengaluru Murali R and Nasa Dhanraj	92020-92026
176	The Role of Blockchain Technology in Smart Contracts : A Boon or A Bane? Subham Chatterjee	92027-92033
177	A Generalization of New Two - Parameter Xrama Distribution and its Application in using Survival Data R. Jothika and P. Pandiyan	92034-92047
178	Internal Audit Procedure for Regulatory Compliance Issues D.Chandana and Y.Koushik	92048-92058
179	Diuretic and Anti-Urolithiasis Activities of <i>Canna indica</i> Linn. Rhizome Extract in Wistar Rats Sreelakshmi S S and Venkatesh Sellamuthu	92059-92067
180	A Study on the Problems and Prospects of Fisheries Sector in Andaman and Nicobar Islands with Special Reference to Port Blair K. Padhmanaban and M. Deepa	92068-92074
181	Identifying a Person by Audio Aesthetic using Machine Learning Sangi Mounika, Pasula Pavan Teja, Shaik Rahman and V.Rajasekhar	92075-92080
182	Neurological Evidence and impact Bias in Legal Proceedings: the Impact on Society Bulbul Roy Chowdhury (Ghosh)	92081-92086
183	Impact of Covid-19 Outbreak on Tourists Inflow in Andaman and Nicobar Islands K. Padhmanaban and S.Varalaxmi	92087-92094
184	A Comprehensive Review on Medicinal Plants : Current Knowledge and Future Perspectives Jyoti Arora, Pramila Kumawat and Sangeeta Choudhary	92095-92102
185	Screening of Potential Bioactive Compounds from <i>Gymnema sylvestre</i> and Evaluation of their Binding Affinity with Interleukin Receptor Associated Kinase for Antidiabetic Activity R.S.Ramprasaath and K. Ramanathan	92103-92112
186	Relay Nodes Selection Algorithm for Clustered Wireless Sensor Network using Fuzzy Logic (RNCWSNFL) Nitin Kumar Jain, Sunil Nimawat and Neeraj Shrivastava	92113-92124
187	Customers' Satisfaction towards an Electric Two Wheeler in Tiruchirappalli District J.Aldrin, S. Fabiyolakavitha and P.Ambika	92125-92132
188	Tree Hop Domination in Connected Graphs S. Muthammai and C. Chitiravalli	92133-92143

189	The Hydrological Simulation of a River Basin using the SWAT-CUP Model Harish Kumar Dwivedi, Archana Keerti Chowdhary, Shakti Suryavanshi and Abhinesh Prajapati	92144-92153
190	Physiotherapy in Rotationplasty : Paving the Path to Mobility and Function Shiwangi Garg, Simran Kaur and Neha Kashyap	92154-92156
191	Efficacy of Organic Fertilizer and Biostimulant on Growth and Yield of Beetroot (<i>Beta vulgaris</i> L.) Cv. 'Detroit Dark Red' Grown in Lower Hills of Uttarakhand Shivani Saklani, Suneeta Singh and Anil Kumar Saxena	92157-92169
192	Analysis of a Liver Disorder using Three Newly Developed MCDM Models Integrated with Bipolar Nonagonal Fuzzy PSI Approach G. Sivakumar and S. Sivakavitha	92170-92184
193	Correlation of Dermatoglyphics and Blood Groups as a Diagnostic tool for Periodontal Status Niket Bhatt, Vidya Dodwad, Nishita Bhosale and Pranav Kulkarni	92185-92192
194	Benzothiazole Derivative : A Review on its Different Activity Samiksha Kumbhare, Tejashree Deokule and Shubhangi Daswadkar	92193-92203
195	Exploring Antioxidant Potential of Bavana Kadukkai Mathirai: An <i>In-vitro</i> Analysis P. Manivannan, V. Mahalakshmi, R. Sumithra, M. Keerthi Grace, R. Suresh, and N. J. Muthukumar	92204-92212
196	Inverses of k - Regular Interval Incline Matrices P. Ramasamy and S. Anbalagan	92213-92220
197	Design and Fabrication of a Manual Wire Stirrup Machine Partha Protim Borthakur, Manabjyoti Buragohain, Iman Kalita, Hrishikesh Ranjan Nath, Rajreet Kashyap and Dhruvabjyoti Mudoi	92221-92230
197	Comparability of Generalized Half Companion Sequences of Dio- 3 Tuples and Special Dio-3 Tuples using Hex Numbers S. Shanmuga Priya and G. Janaki	92231-92238
198	Anxiety, Practice Modification, Economic Impact with Quality of Life among Dentists of Karnataka using WHOQOL-BREF Instrument Post COVID Outbreak Mythri H, Akash N, Sunitha S and Darshana B	92239-92244
199	Addressing CO Poisoning in Formic Acid Oxidation: Pt-Ru based Electro Catalysts for Fuel Cells B. Jagadish Chandrabose, P. Gajendran, R. Ramachandran and J. Tharini	92245-92254
200	Imeglimin Hydrochloride: A Review of Analytical Methods M. K. Vijayalakshmi, B. Amirtha Lakshmi, T. Akshaya, C. Priya Dhaarani, S. Sakthi and S. Sowmiya	92255-92267
201	On Neutrosophic  - Open Sets in Neutrosophic Topological Spaces C. Reena and M. Karthika	92268-92278
202	Nanomaterials Revolutionizing Psoriasis Treatment: Silver Nanoparticles from Medicinal Plant Extracts Renganathan .A and Srinivasan .R	92279-92283

203	Screening of Probiotic Isolates and its Bioactivity Bhavya DC, Ajay Kumar Oli and Virupakshaiah DBM	92284-92298
204	Advancements in Machine Learning for Wildlife Conserv A Comprehensive Survey Diksha Das, Anish Swarnakar, Swati Ghosh, Debraj Roy, Pushpita Roy and Shubhendu Banerjee	92299-92310
205	Molecular Characterization and Industrial Applications of a Cellulolytic Sundarban Mangrove Isolate <i>Bacillus licheniformis</i> GD2 Somnath Das Annesha Chakraborty, Mitun Sen, Nilothpal Sinha, Ankita Gole, and Dipankar Ghosh	92311-92323
206	To Calculate Energy with Bond Energy of Chemical Graphs using Neutrosophic Labeling S. T. Logasoundarya and S. Vimala	92324-92330
207	Malpractices in Regulatory Submissions (MRS) Hemanthikumari and Koushik Y	92331-92337
208	Synthesis, <i>In-silico</i> and <i>In-vitro</i> Antitubercular Activity Screening of Novel Pyrrolyl Thiazolidinone Derivatives Shivani G Shah and Pradeep Kumar M. R	92338-92345
209	Formation, Essential Characterization and Biological Studies of Novel 2,4-Dichloro-6- [(4-Hydroxy-Phenylimino)- Methyl]- Phenol (Dcsap-L) and Ni(II), Zn(II), Mn(II), Co(II) Metal Complexes Derived from 3,5-Dichlorosalicylaldehyde with P-Aminophenol Bijoy Joseph, M. Paul Johnpeter, M. Yosuva Suvaikin, K. Jansi Rani and A. Paul Raj	92346-92356
210	Optimal Control Measure in HMPV Virus in Infected Predator using Harvesting Effort R. Sivakumar, S. Vijaya and K. Balasangu	92357-92365
211	Green HR: Empowering Circular Economies through People and Processes Patcha Bhujanga Rao, P. Chakradhar, M. Vijaya Bhaskar Reddy and Preethi Inampudi	92366-92377
212	Impact of Energy Consumption and Reduction Possibility in Rural Households of Madurai A. Rajeswari and S. Karthikeyan	92378-92394
213	A Comphrensive Pharmocognostic and Pharmacological Review of <i>Colocasia esculenta</i> (L) Schott Kushal R, Narendra R, Syed Mansoor Ahmed, Chidanandamurthy and Raghu J D	92395-92401
214	A Study on Fermatean Picture Fuzzy Graph K. Bhadmavadhi, M. Kannan, K. Sakthivel and A. Rajkumar	92402-92408
215	Effect of Static Stretching in Hamstring Muscle Flexibility of Patients with Mechanical Low Back Pain Siddiqui Mohammed Aejaaz and Amalkumar Bhattacharya	92409-92415
216	Isolation, Molecular Identification and Metabolite Screening of Endophytic Fungi from <i>Tinospora cordifolia</i> Lakshmi Ajit, Nivetha L, Saritha E and Mohana M	92416-92420

217	Advanced Clinical Use of Mass Spectrometry in Toxicology K. Purna Nagasree, G. Dileep Kumar and K. Balakrishna	92421-92432
218	Information in Multiple Facets and its Importance in Diverse Social Development Rama Pal and Mohammad Nasir	92433-92442

Editorial ...



Every year April 22nd we are celebrating and observing World Earth Day in across the world. This day is the best day to raise awareness about the Earth. The theme of Earth Day 2025 is “Our Power, Our Planet.” This Earth Day marks the 55th anniversary. Our planet Earth is the greenest, most fertile, and most habitable planet in the universe. The basic source of life is not only water but also the soil on Earth. There is a difference between the soil on

other planets and the soil on Earth. The soil is alive. It is also the center of life production. If there is no soil, there is no life. Because, we all know that soil is the food that provides life. Many years we have been led to believe that fossil fuels can only power the planet, but that is not true, and that by the 2030s, the planet's electricity will be powered by solar energy, says Denise Hayes, organizer of the first Earth Day. Our ancestors lived in harmony with nature. They gave us that wealth without destroying nature. It is our primary duty to pass it on to future generations. This year's Earth Day calls on everyone around the world, especially in 192 countries, to unite behind renewable energy. The day also aims to triple global clean electricity production by 2030. Solar power is a renewable energy source that does not produce greenhouse gases, does not cause climate change, and improves our environment and human health. We are all join together on Earth Day to take action—through education, advocacy, and mobilization—to pledge to take action on Earth on social media, to participate in local events, to plan and register, and to integrate Earth Day lessons into the curriculum. Furthermore, due emphasis should be given to high-level research and development programs on technologies that meet our global energy needs from clean, affordable renewable energy sources such as solar, wind, geothermal, wave, and hydro resources, and government and private institutions, universities, colleges, and research centers should come forward to make these technologies accessible to all. Forty-nine countries, including India, Canada, Switzerland, Austria, New Zealand, Brazil, Norway, Sweden, and Denmark, already generate more than half of their electricity from solar, wind, hydro, and geothermal resources. For example, Iceland gets 99.99 percent of its electricity from renewable sources. “It takes a collective people's power to make a big shift to renewable energy,” says Kathleen Rogers, president of EDO. The 20 million people who marched on Earth Day in 1970 sparked the modern environmental movement, leading to clean air, water, and wildlife protection. In 2024, a campaign to reduce global plastic production captured the attention of the world's nations. Renewable energy can directly or indirectly alleviate poverty, improve quality of life, and improve health outcomes. For example, reducing greenhouse gas emissions reduces health risks associated with climate change, such as heat waves, floods, and the spread of infectious diseases. And reduced air pollution reduces respiratory and cardiovascular diseases, including asthma and stroke. Renewable energy is not only clean and healthy – it represents a huge economic opportunity and is projected to create 14 million new jobs worldwide, with renewable energy globally growing by 17.2% annually from 2024 to 2030. This transition to growth may present us with many obstacles, but our overarching goal is to move away from our dependence on fossil fuels and embrace a sustainable future.

Editor in Chief, IJONS

Cover image :

image credit : Vijikumar Sahadevan