GO GREEN SUMMIT

2024

Proceedings of

11th GoGreen Summit

📅 13th & 14th December 2024

📍 Bali, Indonesia

Organized by **IFERP Life Sciences-formerly BioLeagues**

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Sustainable Solutions For A Greener Tomorrow

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Preface

This book reports the Proceedings of the "11th GoGreen Summit" held on 13th & 14th December 2024, organized by IFERP Life Sciences.

The publishing department has accepted more than 150 abstracts. After an initial review of the submitted abstracts, 75+ papers were presented at the conference and were accepted for publication in the Conference Proceedings. The topics that are covered in the conference include environmental sustainability, encompassing renewable energy, eco-friendly technologies, sustainable agriculture, waste management, conservation efforts, and initiatives promoting green infrastructure and practices. We would like to thank all the participants for their contributions to the conference and the proceedings.

Reviewing papers of 11th GoGreen Summit was a challenging process that relies on the good will of those people involved in the field. We were invited to the 11th GoGreen Summit Proceedings. We would like to thank all the reviewers for their time and effort in reviewing the documents.

Finally, we would like to thank all the proceeding team members who with much dedication have given their constant support and priceless time to bring out the proceedings in a grand and successful manner. I am sure the 11th GoGreen Summit will be a credit to a large group of people, and each one of us should be proud of its successful outcome.

- **11th GoGreen Summit**

About
11th GoGreen Summit

The GoGreen Summit is a premier global platform dedicated to providing innovative environmental solutions to the pressing issues facing our world today.

As we celebrate our 11th series, the GoGreen Summit will convene in Indonesia on December 13th and 14th, 2024. This milestone event continues the tradition of fostering collaboration among environmental experts, policymakers, businesses, and individuals from around the globe.

11th GoGreen Summit provides a unique strategic forum for academia, environmental activists, private sector, policymaker and scientists to come together to envision a healthier future, where the power of shared expertise and collective action is harnessed to overcome the most complex environmental solution facing humanity and the world.

Together with our distinguished partners, we are proud to be hosting the 11th GoGreen Summit world Meeting in Indonesia on 13th and 14th December 2024.

Over the years, the GoGreen Summit has brought together a diverse array of perspectives and expertise to develop actionable solutions. With renowned experts covering cutting-edge topics, attendees can anticipate insightful sessions, valuable networking opportunities, interactive panel discussions, and engaging workshops.

Join us for a dynamic conference experience designed to elevate knowledge and foster collaboration. Mark your calendars for this impactful event and be a part of the movement towards a greener tomorrow. Join us at the 11th GoGreen Summit and make a difference!

About
IFERP Life Sciences

Explore your Medical Research Journey with IFERP Life Sciences !

IFERP Life Science is a globally recognized professional association meant for research, innovation and development in the field of life sciences and medical sciences . It serves to propel and fuel all innovative works of research with immense potential in the fields of Healthcare, Life Sciences, Pharmaceutical Sciences, Medical Sciences, Food & Nutrition, Environmental Science, Oncology, Cardiology, Nursing, Microbiology, Physiotherapy, Dentistry and many more. IFERP Life Science has been directly responsible for a significant amount of the revolutionary developments that have taken place in these fields over the past few decades.

IFERP Life Science is a specialized platform that supports life science and medical professionals in advancing their careers and research impact. Our tailored solutions include international conferences, Faculty Development Programs, Webinars, author services, membership and scientific communications, designed to foster collaboration and knowledge-sharing within the global medical community.

Message from Director, IFERP Life Sciences

On behalf of BioLEAGUES, I am delighted to welcome all the delegates and participants around the globe to the "11ᵗʰ GoGreen Summit" held on 13ᵗʰ and 14ᵗʰ December 2024.

This conference will revolve around the theme "Sustainable Solutions for a Greener Tomorrow". It will be a great pleasure to join with all Students (UG/PG), Research Scholars, Scientists, Clinicians, Dental Experts, Budding Dentists, and Professors from all over the world in sharing the recent trends, techniques and researches in advancing environmental sustainability.

I congratulate the Convenor, Organizing Committee Members, National Advisory Committee Members, International Advisory Committee Members and Coordinators who involved in organizing the 11ᵗʰ GoGreen Summit and wish all the delegates and participants a very pleasant conference.

Mr. A. Siddth Kumar Chhajer
Managing Director & Founder,
IFERP Life Sciences

Message from CEO, IFERP Life Sciences

It is indeed a privilege to acknowledge and thank all the supporters and organizers of the "11th GoGreen Summit", who contributed greatly to organize the conference successfully.

I would like to acknowledge and thank the Organizing Secretary, Joint Organizing Secretary, Conference Chair, Conference co-chair, Committee Members for their valuable contribution in the "11th GoGreen Summit"

My special thanks to all our Keynote Speakers who so graciously accepted our invitation to participate in the conference. I also wish to acknowledge and thank the Academic Partners whose support was extremely grateful.

I would like to specially thank our Organizing Committee Members from various Organization whose continuous support have helped us plan and execute the conference successfully.

I am highly indebted to the contribution given by all the Participants to the conference.

Mr. Rudra Bhanu Satpathy

CEO & Founder,
IFERP Life Sciences

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Welcome Message

Ms. Stella Lau

Managing Director, Group Operations, Globalisation and Digitalisation
SEGi University and Colleges, Malaysia

On behalf of SEGi University, it is my honour and privilege to welcome you to the 11th GoGreen Summit, hosted by BioLeagues on the 13th and 14th of December 2024. This year's theme, "Sustainable Solutions for a Greener Tomorrow," could not be more timely, as our world confronts unprecedented environmental challenges that require bold, innovative, and collective action.

I am delighted that the GoGreen Summit brings together an extraordinary range of voices—academics, industry leaders, policymakers, and grassroots advocates—to exchange ideas, share insights, and collaborate on pioneering solutions. Indeed, this conference promises to be a powerful catalyst for innovation and impact.

This year's agenda is particularly inspiring, covering critical topics such as renewable energy, eco-friendly architecture, waste management, and sustainable transportation. Each session has been thoughtfully designed to provoke thought, challenge assumptions, and inspire practical actions that can be implemented globally and locally.

We are especially excited about the workshops and networking opportunities embedded in the program. It is in these conversations that real progress is made, as ideas evolve into action plans that can drive measurable change. As we gather for these two days of learning, sharing, and envisioning a better future, let us remember that sustainability is not just about addressing the environmental issues we face today. It is about creating systems, practices, and mindsets that will allow future generations to thrive.

I also want to express my gratitude to BioLeagues for their exceptional efforts in organizing this conference. Their vision and dedication have been instrumental in creating a platform that empowers us all to be active participants in shaping a greener tomorrow.

To all delegates, I encourage you to engage fully with the programme, embrace the exchange of ideas, and leverage this gathering to amplify your impact. Let us leave this summit not only inspired but equipped to lead transformative change in our respective fields. May this be a journey of discovery, collaboration, and hope. Together, we can achieve the sustainable future we envision.

Welcome Message

Dr. Vishnuvardhana

Vice-Chancellor,
University of Horticultural Sciences,
Bagalkot, Karnataka, India

I am delighted to welcome you all for this 11th GoGreen Summit-2024 as one of the academic partners along with BioLEAGUES. Indeed, it's my pleasure to be involved in organizing this scientific meet, which is dedicated to discuss various issues and possible solutions for a hospitable living environment for every organism on earth. We are gathered here to deliberate the issues under carefully chalked out theme "Sustainable solutions for a greener tomorrow" during 13th-14th, December, 2024 in Bali, Indonesia.

College of Horticulture, Bengaluru, a constituent College of University of Horticultural Sciences, Bagalkot, Karnataka, India is involved in catering the needs of Horticulture sector in Karnataka state has joined hands with BioLEAGUES, a non-profit professional organization associated with promotion of research and development across life sciences, other associates being SEGi Universities and Colleges, Malaysia and Chandrashekhar Azad University of Agriculture and Technology, Kanpur, India in chalking out very pertinent themes for this GoGreen Summit series.

There are fifteen broad themes viz. waste management, renewable energy and green manufacturing technology, global warming and climate change, pollution and health effects, industrial health and toxicology, green construction and smart cities, sustainable agriculture, disaster management, ocean technology and oceanography, water conservation, management, and treatment, nanotechnology impacts on environment, green mobility, lifestyle fashion and green wearables, green economy and sustainable business and ecotourism and sustainable tourism for deliberations. Under each theme critical issues and solutions will be discussed, for example under the theme: Sustainable Agriculture, topics covered are crop production technology, water saving technologies, agriculture and food security, soil management, biofertilizers, agribusiness management, transgenic plants and food waste management. In this connection, every aspect of environment will be discussed and evaluated in the summit involving all the concerned scientists, industrialists, policy makers' professional experts and other stake holders from various institutions. This is made possible through BioLEAGUES Conference series 11.

On behalf of UHS, Bagalkot, Karnataka, India, I appreciate the efforts of BioLEAGUES and co-partner institutions for their efforts in creation of hospitable living environment. I wish the two days deliberations will result in arriving at fruitful solutions towards creation of greener environment for the future. I convey my best wishes to all of you involved in making this summit a grand success.

Welcome Message

Dr. Anand Kumar Singh

Vice-Chancellor,
Chandra Shekher Azad University of Agriculture
& Technology, Kanpur, Uttar Pradesh, India

It is a privilege to welcome the organizers, distinguished participants, scientists, researchers, industrialists, keynote speakers, and session chairs from India and abroad to the 11ᵗʰ GoGreen Summit-2024, held on December 13ᵗʰ to 14ᵗʰ in Bali, Indonesia.

As Chair of this event, I commend the collaboration between BioLEAGUES and Chandra Shekhar Azad University of Agriculture & Technology (CSAUA&T), Kanpur-the first NAAC-accredited agricultural university in India-alongside support from international partners. This CPD-accredited hybrid conference, with over 200 participants from 10+ countries, focuses on "Sustainable Solutions for a Greener Tomorrow," addressing pressing environmental challenges and promoting innovative strategies for sustainability.

The Summit unites experts, policymakers, and industry leaders to advance renewable energy, reduce greenhouse gas emissions, and minimize dependence on fossil fuels. Such initiatives aim to foster eco-friendly practices and ensure a hospitable environment for future generations.

I commend the organizing efforts of BioLEAGUES, CSAUA&T, and partner institutions, and I hope this Summit generates actionable solutions for a sustainable future.

Together, let us bridge science and society for a greener tomorrow.

Thank you!

About Speakers

Conference Chair

Dr. Anand Kumar Singh

Vice-Chancellor,
Chandra Shekher Azad University of Agriculture & Technology, Kanpur, Uttar Pradesh, India

Organizing Secretary

Dr. T. H. Shankarappa

Professor and Head, Department of Natural Resource Management, College of Horticulture, GKVK, UHS Campus, Bengaluru, India

Conference Co-Chair

Dr. Dhananjaya B N

Associate Professor, Soil Science and Agricultural Chemistry, Department of Soil Science, College of Horticulture, UHSB Campus, GKVK Post, Bengaluru, India

Scientific Chair

Dr. Maruthi Prasad B.N

Associate Professor and Head, Plantation, Spices, Medicinal and Aromatic Crops, College of Horticulture, GKVK, UHS Campus, GKVK, Bengaluru, India

About Speakers

I Gusti Bagus Rai Utama is the Rector of Dhyana Pura University and a Professor of Tourism Business Management at the Faculty of Business, Tourism, Education, and Humanity at Dhyana Pura University in Bali, Indonesia. He holds a Doctorate Degree in Tourism Studies, a Master's degree in Agribusiness from Udayana University, and a Master of Arts in Leisure and Tourism Studies from CHN Professional University (now NHL Stenden) in the Netherlands. Additionally, he holds a Bachelor of Arts in Development Economics from Mahasaraswati University, Bali. His research focuses on Economic Tourism, Agritourism, Destination Management, and Ecotourism.

Dr. I Gusti Bagus Rai Utama

President, Dhyana Pura University Bali,
Bali, Indonesia

Dr. Takeshi Takama is CEO of su-re.co, a young think-and-do tank which aims to truly achieve a better environment and society for all of us. He makes strategic plans and decisions to make sure that projects run smoothly and effectively to support people in developing countries and solve environmental problems based on scientific analysis. For over fifteen years Takeshi has served as an international expert on climate change, environment and energy for international and bilateral agencies including the Asian Development Bank (ADB), the Japan International Cooperation Agency (JICA), the German Agency for International Cooperation (GIZ) and various UN agencies. Takeshi is also an associate at Stockholm Environment Institute (SEI) and a professor at Udayana University. He holds a PhD in Economic Geography from Oxford University.

Dr. Takeshi Takama

Chief Executive Officer, Climate change and environment expert, Sustainability and Resilience (su-re.co), Bali, Indonesia

IFERP Life Sciences

About Speaker

Dr. Renierio E. Aligonero

Chairperson, College of Tourism, International Linkages Director, Southville International School and Colleges, Philippines

Dr. Aligonero loves education, socio-political sciences, tourism and hospitality management. He currently holds the prestigious positions of International Linkages Director and Chairperson of the College of Tourism at Southville International School and Colleges, Philippines, where his leadership and vision continue to inspire both students and faculty.

Dr. Aligonero's academic credentials speak of his 34 years in the academe. He holds a Bachelor of Arts major in Political Science from Central Philippine University and a Bachelor of Science in Tourism. He further advanced his education with a Master in International Hospitality Management (MIHM) from Lyceum of the Philippines Batangas, where he is also a Licensed Professional Teacher. Dr. Aligonero has achieved the highest level of academic excellence with a Doctor of Philosophy in Management from the same institution. Additionally, he has completed the academic requirements for a Master of Arts in Educational Management with specialization in Educational Management at the Philippine Normal University.

His professional journey is as distinguished as his academic one. Dr. Aligonero has extensive international experience, having visited Hong Kong; China and its provinces and cities like Shenzhen, Guangzhou, and Beijing; Thailand; Qatar; Indonesia; South Korea; and Cambodia as part of his work. He has served as the Chairman of the National Board of Advisers and Treasurer of the Junior Tourism and Hospitality Management Association of the Philippines (JTHMAP) from 2021 to 2023. Currently, he is the Committee Chair for Instruction and Programs (2023-2025) for the Association of Administrators in Hospitality, Hotel, and Restaurant Management Educational Institutions (AAHRMEI). He also serves as an officer of Metro Manila Education Tourism Association (MMETA).

Dr. Aligonero is also the Convention Co-Chair of the 2nd AAHRMEI International Convention 2023 and the 23rd National Convention in Seoul, South Korea. He has held various significant roles such as the General Membership Meeting (GMM) Chair of AAHRMEI in 2023, Training Development Head of Taylor Center for Professional Development, International Baccalaureate Program faculty, and Subject Area Head of Social Living and Global Education.

His interests are diverse and include ecotourism, destination marketing, green practices, farming, traveling, writing, hosting corporate and related events, events management, wellness and fitness, training and development, student leadership, and auditing (internal ISO auditor). Dr. Aligonero is also an avid animal lover with 12 dogs.

Most recently, Dr. Aligonero delivered an insightful talk on "Responding to the Challenges of Artificial Intelligence in Tourism and Hospitality" at the Manila Grand Opera Hotel on May 4, 2024. Lately, he was invited to deliver a talk, "Diplomacy Beyond Borders: Peace through People-to-People Tourism Initiatives" an international collaboaration with Jyoti Nivas College Autonomous, Bangalore, India on September 26, 2024.

Rene is devoting his time for charity works and in 2021, he founded the The Julian and Remedios Espulgar Aligonero Community Outreach and Productivity Engagement (JREA-COPE) which the family began with KINDNESS PROJECTS and now into FAITH KINDNESS.

About Speakers

Dr I Gede Ketut adiputra was a senior lecturer at the University of Hindu Indonesia from 2005 until retired in 2022. Conducting various research on agroforestry funded by the Department of Education and Culture of the Republic of Indonesia and also from the University of Hindu Indonesia. Published various articles in Scopus-indexed journals and was also a reviewer of various journal articles from Copernicus-indexed journals.

Dr. I Gede Ketut Adiputra
Universitas Hindu Indonesia, Denpasar, Bali, Indonesia

Rahmadi Prasetijo had major expertise in Diving Scientist, Marine Biology Research, MarineConservation, Underwater Works And Also Marine Tourism. Hold on Doctor of Tourism in Udayana University Bali, Master Degree in Environmental Engineering and Bachelor degree in MarineScience and Technology. He is a member of Indonesian Oceanographers Association (IOA) and Indonesian Coastal Zone and Small Islands Management Expert Association also Bali Professional Consultant Association.

Dr. Rahmadi Prasetijo
Founder, Marine Education and Research Organization (MERO) Foundation & Lecturer, Dhyana Pura University Bali, Bali, Indonesia

About Speakers

Dr. Ratneswary Rasiah is an Associate Professor at the Graduate School of Business ,SEGi University Malaysia , She previously held the position of Programme Director of the Post- Graduate Business (Coursework) Programmes, Taylor's Business School, Taylor's University, where she has been attached for the last eighteen years. She has extensive teaching experience in the field of Economics for the past thirty-one years, having taught numerous undergraduate and post-graduate modules. In addition, she has also taught Economics for the University of London International Programme, at the British University in Hanoi, Vietnam. She received the Taylor's Education Group Chairman's Award for Excellence in Teaching for her immense contribution in the field of teaching and learning.Dr. Ratneswary also actively undertakes research and scholarly activities. Aside from supervising PhD students and presenting papers at international conferences, she has also published several papers in peer-reviewed journals and has secured several research grants. Her research area of interest includes financial literacy, financial well-being, retirement preparedness, subjective well-being, environmental issues and fertility. Her publications involve both primary and secondary data analysis techniques including AMOS-SEM, PLS-SEM and panel estimation techniques such as Pooled Mean Group, Mean Group, Dynamic Fixed Effect and Generalized Method of Moments. She also actively conducts trainings /workshops.

Dr. Ratneswary Rasiah
Associate Professor of Economics, Graduate School of Business, SEGi University, Malaysia

Prof. Ts. Dr. Wong Ling Shing graduated from the National University of Malaysia (UKM) in 2011 with a Ph.D. in Environmental Science. He is a passionate researcher with diverse interests, including biosensors, bioindicators, culturing photosynthetic microbes, and agricultural biomass. His extended interests in nanotechnology, health sciences, artificial intelligence, and renewable energy. He has completed over 25 research projects and published more than 200 scientific articles.

Wong has won numerous awards, including medals at internationally recognized innovation competitions such as Malaysia Technology Expo (MTE), International Technology Expo, Prodec, Innofest, and Perintis. INTI International University recognized his contribution to the university with the Vice Chancellor Award and The Most Promising Young Researcher in 2016.

Wong is currently the president of Einstein Research Academy, the Editor-in-Chief of INTI Journal, and a member of several professional societies. He is now leading INTI International University as Pro Vice-Chancellor for Research and Innovation.

Dr. Wong Ling Shing
Pro Vice-Chancellor, Research and Innovation, INTI International University, Malaysia

About Speakers

Dr. Maria Crisella Dela Cruz-Mercado

Project Monitoring Committee Head, Pampanga State Agricultural University, Magalang, Pampanga, Philippines

Prof. Dr. Maria Crisella A. Dela Cruz-Mercado is a graduate of Doctor of Technology from Technological University of the Philippines – Manila in 2018. She is also a holder of Master of Science in Civil Engineering also from TUP-Manila and an alumna of Adamson University with a degree of Bachelor of Science in Civil Engineering. Dr. Dela Cruz-Mercado is a dedicated faculty member of Pampanga State Agricultural University. She is formerly affiliated in the College of Engineering and Computer Studies (COECS) and a returnee at the College of Education (COED). She serves the university as the Head of the Project Monitoring Committee and continuing her services as Coordinator for Student Welfare Unit under the Office of Student Affairs and Services. She is also a licensed teacher with Mathematics as her specialization. Aside from being a teacher, Dr. Dela Cruz-Mercado is known to her women empowerment advocacy where she serves as the president of the Soroptimist International of PSAU-Magalang charter for the biennium 2018-2020. She has served as organization adviser to BSCE Civil Engineering students (2021- 2023) and College of Education – Mathematics major students (2013-2021) and formerly the founding adviser of Physics Society (PhySo) in FEU-Tech. She was formerly a faculty member of Adamson University and FEU-Institute of Technology (formerly FEU-East Asia College) where she served for more than a decade. She was also one of the Commission on Higher Education (CHED) Scholars during her post- graduate program.

Dr. Edwin R. de los Reyes is a highly accomplished academic with extensive experience in education, research, and administration. He holds a Doctor of Philosophy degree in Management from the Philippine College of Health Science, Inc. Dr. de los Reyes is an Associate Member of the National Research Council of the Philippines and has served as a professor, researcher, and administrator at various institutions, including the Universidad de Zamboanga, the University of Perpetual Help System GMA Campus, and the Zamboanga State College of Marine Sciences and Technology. He has published several papers in Scopus in Education, Management, Engineering, and Social Sciences. His latest published papers, in collaboration with other institutions, were about e-waste management. Dr. de los Reyes has also held leadership roles in professional organizations, including the Academic Development for Global Leadership in Education (ADGLE)-Philippines, Asia-Pacific Consortium for Researchers and Educators (APCORE), the Philippine Association of Institutions for Research, Inc. (PAIR), and the Asian Society of Teachers for Research (ASTR). He is a dedicated educator who enjoys sharing his knowledge through writing and speaking. He has published several articles in academic journals and presented at a number of international conferences. He is passionate about quality education and committed to promoting research and innovation.

Dr. Edwin R. De Los Reyes

Director, International Relations Office, Zamboanga State College of Marine, Sciences and Technology, Philippines

About Speakers

Dr. Nagandra Kumar Sharma, Professor in Physics have an additional responsibility of Dean, College of Fisheries Science & Research Centre, Etawah. At present Dr. Sharma also have an additional charge of Dean, College of Agricultural Engineering & Technology, Etawah. He has 39 year teaching and Research experience and at present he is the Chairman, Board of Faculty of Technology, Etawah and the member of Academic Council Chandra Shekhar Azad University of Agriculture & Technology, Kanpur. Dr. Sharma graduated and post graduated from Agra University, Agra and completed the M.Phil and Ph.D. degree from Aligarh Muslim University, Aligarh. Dr. Sharma also worked as Post Doctoral Fellow in UGC-DSA Research Programme at Aligarh Muslim University, Aligarh. Dr. Sharma participated as invited and keynote speaker in various National and International Conference and recently wrote a book entitled "Application of IoT in Agriculture". Dr. Sharma published various research papers in National & International journals and visited Tata Institute of Fundamental Research, Bombay during his research career.

Dr. Nagandra Kumar Sharma

Dean, Faculty of Technology, Chandra Shekher Azad University of Agriculture and Technology, Campus-Etawah, India

Dr. Anand Kumar Singh FNAAS, NABS, HSI, is the current Vice-Chancellor of Chandra Shekhar Azad University of Agriculture & Technology. Dr. Anand Kumar Singh journey from BHU to IARI, coupled with post-doctoral fellowships in the USA and Japan, showcases his dedication to scholarly excellence. His impressive tenure includes prestigious roles such as Deputy Director-General at ICAR and Executive Director at NOVOD Mission, Ministry of Agriculture & Farmer's Welfare, GOI. Recognized internationally, Dr. Singh has represented India on numerous occasions and received accolades like the Mombusho Award in Japan. With 137 research papers and 12 books to his credit, his contributions are invaluable.

Dr. Anand Kumar Singh

Vice-Chancellor, Chandra Shekher Azad University of Agriculture & Technology, Kanpur, Uttar Pradesh, India

About Speakers

Dr. A B Patil

Officer on Special Duty to Minister for Agriculture, Government of Karnataka & Former Registrar to UAS Bengaluru and UHS, Bagalkot, India

Dr. A. B. Patil graduated from University of Agricultural Sciences, Bengaluru and was awarded Doctoral Degree from St. Petersburg State Agrarian University, Russia. His contributions on microbial inoculants, fermentation technology, organic farming practices for sustainable agriculture etc. over a period of 45 years has seen remarkable developments.

Dr. Patil has executed 17 research projects with a budget outlay of Rs. 17 Crores and has guided 17 Post graduate students. He developed three farmer friendly technologies, published 25 research papers, 80 popular articles, 20 books in vernacular language for the benefit of scientific and farming community. He has presented research papers in many National and International Conferences and visited more than 17 countries.

Even after his superannuation in the year 2018, Dr. Patil continued to serve farming community; he joined the Ministry of Agriculture, Government of Karnataka as an Officer on Special Duty to Minister for Agriculture,. He has been dedicating his yeoman services with commitment and concern in technically guiding the honorable ministers for agriculture and assisting the government in envisaging new policies in agriculture.

Dr. Patil has contributed in formulation of Agricultural policies as an Agricultural Expert in more than 10 government committees and presented the vision document on agriculture in Karnataka till 2025. Dr. Patil's service and his contributions as a scientist, as an administrator and as a policy maker has brought him more than 20 laurels, awards and recognitions.

Esayas Woldesenbet is an Ecologist and conservation Biologist, earned PhD and MSc in Ecological Sciences from college of natural science, Addis Ababa University. Besides, she earned M. A. in Project Management from School of Commerce, Addis Ababa University.

Served in both governmental and nom-governmental organization and involved in leading & managing projects mainly focused on Natural Resource Management, Food security & Livelihood, Climate change, Climate Smart Agriculture (CSA), Gender, Economic Empowerment & Development. Dr. Kalkidan had been working in different position including: Country Director, Project Manager, Policy Advisor, National Chapter Advisor, Lecturer and researcher. Currently, Dr. Kalkidan is working as a consultant and a master trainer at Kal consulting.

The recipient of several accolades including 2020 International Visitors Leadership Program (IVLP) from US State Department, 2023 Beahrs Environmental Leadership Program (ELP) at the Rausser College of Natural Resources at the University of California, Berkeley, 2023 Women and Enterprise Development from Indian Technical and Economic Cooperation (ITEC), India. She also received different award in volunteering and delivering training for the community. Dr. Kalkidan is one of the founder and board member of US Exchange Alumni of Ethiopia.

Dr. Kalkidan Esayas Woldesenbet

PhD, Ecology, Consultant and Master Trainer, Addis Ababa, Ethiopia

Abstract's Index

The Nexus of Environmental Degradation and Economic Growth in ASEAN-5+2: A Panel Data Analysis with Trade Openness, Urbanization, and Energy Consumption Controls

Ding Dong
Graduate School of Business, SEGi University, Malaysia &
Henan University of Economics and Law, China

R Ratneswary A
Graduate School of Business, SEGi University, Malaysia

P V Rasiah
Graduate School of Business, SEGi University, Malaysia

Abstract:

The Anthropocene period is marked by the persistent acceleration of environmental degradation and the destruction of the natural ecosystem. Due to the escalating release of carbon dioxide and other greenhouse gases, there has been a gradual increase in average recorded temperatures. While certain temperature variations are of natural origin, the predominant factor behind environmental degradation, as widely agreed upon by an overwhelming majority of the global scientific community, may be ascribed to human activities. This study appropriately investigates the long-term correlations and short-term dynamic interactions between environmental degradation and its causes, including economic growth, trade openness, urbanization, and energy consumption, from 1990 to 2022. The research utilized dynamic heterogeneous panel estimating methods, including mean group (MG), pooled mean group (PMG), and dynamic fixed effects, to examine a macro panel dataset from the ASEAN-5+2 nations, aiming to identify potential causal relationships among the variables. Estimating approaches indicate that economic growth, urbanization, and energy consumption substantially contribute to carbon emissions in long-run, with urbanization as the primary factor. The analysis also indicates that trade openness is not a significant factor in influencing environmental degradation in the ASEAN5+2 nations. At the conclusion of the paper, policy recommendations will be presented based on the outcomes of the data analysis.

Keywords:

Environmental Degradation, urbanization, Pooled Mean Group, ASEAN-5+2

The Role of Regional Public Brands in Live Streaming Sales of Agricultural Products and Their Impact on Farmers' Sustainable Income and Green Agricultural Development: An Empirical Analysis of Consumers in Guangdong, China

Chao Ruiyun
Guangzhou Nanyang Polytechnic College, Guangdong, China &
Graduate School of Business, SEGi University, Malaysia

Ratneswary Rasiah
Graduate School of Business, SEGi University, Malaysia

Abstract:

Purpose: This study examines the influence of regional public brands on consumers' online purchasing intentions and behaviors, particularly focusing on green agricultural products sold via live streaming platforms in Guangdong, China. It investigates how key brand factors—brand awareness, perceived quality, and brand trust—affect online purchase intention and, subsequently, purchase behavior.

Design/Methodology/Approach: A quantitative research approach was employed, utilizing a structured questionnaire distributed to 400 live-streaming e-commerce consumers of agricultural products in Guangdong. Partial Least Squares Structural Equation Modeling (SEM) was used to assess the relationships between brand awareness, perceived quality, brand trust, online purchase intention, and online purchase behavior. Mediation analysis was further applied to examine the mediating role of online purchase intention in the relationship between brand factors and purchase behavior.

Findings: The study revealed that brand awareness, perceived quality, and brand trust significantly impact online purchase intention of green agricultural products, which, in turn, influences online purchase behavior. Of these factors, brand awareness was found to have the strongest effect on purchase intention. Moreover, the analysis confirmed that online purchase intention mediates the relationship between brand factors and online purchase behavior of green agricultural products.

Originality/Value: This research underscores the critical role of regional public brands in boosting the sales of green agricultural products through live streaming platforms. The findings provide valuable insights for policymakers and marketers working to enhance rural e-commerce and support rural revitalization efforts. Specifically, the study emphasizes the importance of brand management in enhancing brand awareness, trust, and perceived quality, which are vital for fostering sustainable agricultural development and improving farmers'incomes.

Keywords:

Regional Public Brands, Green Agricultural Products, Live Streaming, Online Purchase Intention, Online Purchase Behavior, Brand Awareness, Perceived Quality, Brand Trust, Rural E-Commerce, Guangdong.

The Influencing Factors of Green Purchase Intention Among Chinese College Students: A Mediator Analysis of Subjective Norms

Chen Kun
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Chen Chuanming
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Graduate School of Business, SEGi University, Malaysia & Yunnan University of Bussiness Management, Yun Nan, China

Ratneswary Rasiah
Graduate School of Business, SEGi University, Malaysia

Abstract:

Purpose: Protecting biodiversity, promoting low-carbon development and advocating green consumption have received global consensus of countries, in dealing with environmental issues. This study seeks to examine the impact of environmental knowledge, green perceived value, and perceived behavioral control on the green purchase intentions of Chinese college students, while also investigating the mediating effect of subjective norms in these relationships.

Design/Methodology/Approach: The study employs quantitative research methods, utilizing a sample of 567 Chinese college students and collecting primary data through a questionnaire survey, conducted in strict accordance with ethical guidelines. Partial least squares structural equation modeling (PLS-SEM) was applied to evaluate both the measurement and structural models.

Findings: The results indicate that green perceived value and perceived behavioral control have significant relationships with the green purchase intentions of Chinese college students, while environmental knowledge does not. Additionally, subjective norms serve as a mediator between the three exogenous variables (environmental knowledge, green perceived value, and perceived behavioral control) and the endogenous variable, green purchase intention.

The Originality/Value: The results establish subjective norms as not only a mediator but a critical predictor of green purchase intention, offering a novel contribution to the field of green consumption research. This study advances the theoretical landscape by filling gaps in the existing literature and presenting original insights into the drivers of green behavior among college students. Moreover, the findings present actionable strategies for government, academia, and industry, empowering them to more effectively shape and influence the pathways through which green purchase intentions develop among Chinese college students. This research marks a significant step forward in understanding the dynamics of sustainable consumer behavior.

Keywords:

Environmental Knowledge, Green Perceived Value, Perceived Behavior Control, Green Purchase Intention, Subjective Norms, Chinese College Students

Risk Communication of a Flood-prone Farming Community in Nabua, Camarines Sur, Philippines

Dr. Claribelle C. Haber
Central Bicol State University of Agriculture, Bicol Region, Philippines

Abstract:

This study aims to communicate disaster risks through the development of risks communication materials prototypes. Its specific objectives are to: (1) Determine the socio-demographic profile of the respondents; (2) Identify preferred IEC by the respondents; (3) Design risk communication materials prototype. This study utilized a two-part survey questionnaire for gathering data. This study is a design and development research (DDR). Data were computed and analyzed using simple statistical tools such as frequency, percentages and ranks.

These data were presented and discussed using appropriate tables, figures and graphs. There were sixty-eight (68) farmer-respondents in La Purisima, Nabua, Camarines Sur.

The findings of the study revealed that the demographic composition of farmer-respondents in La Purisima reflects a diverse age distribution, with implications for the coexistence of traditional agricultural wisdom and the potential integration of modern practices within the farming community. The data on local authorities and government agencies emerged as the most trusted entities, reflecting a reliance on official and authoritative channels. Text-based information stands out as the most accessible, emphasizing the community reliance on written content.

This suggests a strong preference for written formats within the community. The perceived moderate level of accessibility of communication materials in the community indicates a prevailing sentiment that, while accessible, there may be room for improvement in making information even more readily available.

This study focused on disaster risk reduction communication channels, highlighting the significance of television, mobile apps, and SMS alerts. Radio remains important in areas with limited infrastructure. Successful flood forecasting requires clear warnings tailored to recipients' needs. Collaboration with local authorities, government agencies, and community leaders builds trust. Scientific research adds credibility, but incorporating local experiences is essential for trust.

Assessing material accessibility is crucial, with visual cues playing a key role. The study recommends tailoring communication strategies to community preferences for more effective risk mitigation.

Keywords:

Disaster, Disaster Preparedness, Hazard, Information, Education and Communication (IEC) materials, Resilience, Risk

The Role of Digital Transformation in Enhancing Employee Competencies: A CMMI-Mediated Approach Towards Sustainable Organizational Development

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Abstract:

Purpose: This study investigates the impact of Digital Transformation (DT) on Employee Competencies, with a particular focus on the mediating role of Capability Maturity Model Integration (CMMI). The research explores how digital platforms, data media, and automation influence the enhancement of employee competencies, while also considering sustainability in organizational growth.

Design/Methodology/Approach: This study employed a quantitative survey design, collecting cross-sectional data from 150 small and medium-sized enterprises (SMEs) in Xi'an, Shaanxi Province. A total of 300 structured questionnaires were distributed, with 265 valid responses received. To ensure the scientific rigor and reliability of the results, data were analyzed using Smart PLS-SEM (Partial Least Squares Structural Equation Modeling). Measurement and structural models were developed to verify the reliability and validity of the instruments and to test the research hypotheses.

Findings: The data analysis results indicate that the research instrument demonstrated excellent performance in terms of composite reliability, factor loadings, Cronbach's α, and average variance extracted (AVE), meeting statistical requirements. The results of the structural model further confirmed that all hypotheses were supported. Additionally, the study revealed that all components of digital transformation (including digital platforms, digital media) have a positive impact on Employee Competencies, either directly or through the mediating effect of CMMI. Furthermore, the integration of CMMI enhances an organization's ability to achieve sustainable development by promoting the continuous improvement of employee capabilities.

Originality/Value: This study contributes to the growing body of knowledge on Digital Transformation by providing a unique examination of CMMI as a mediator in the relationship between DT and Employee Competencies. It also offers practical insights into how organizations can leverage digitalization and process maturity models to promote sustainability through workforce development.

Keywords:

Digital Transformation, Capability Maturity Model Integration, Sustainable Organizational Development, PLS-SEM

Spatiotemporal Trend Analysis of Temperature and Rainfall in Garhwal Himalayas, Uttarakhand, India

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Abstract:

Climate change represents a complex challenge, with far-reaching implications for ecosystems, human communities, and economic systems. The Garhwal Himalayas, situated along the southern flanks of the Himalayan range, embody a region of exceptional biodiversity and geomorphological diversity, yet are acutely susceptible to climatic perturbations due to their fragile ecological framework. This study provides a comprehensive spatiotemporal analysis of long-term trends in temperature and precipitation over the Garhwal Himalayas, leveraging historical climate datasets from 1951 to 2023, sourced from the India Meteorological Department (IMD). Statistical methodologies, including linear regression and time series decomposition, along with the Mann–Kendall (MK) Test and Sen's Slope Estimator are utilized to assess the statistical significance and magnitude of these trends. The results indicate statistically significant warming in minimum temperatures, particularly during the winter and post-monsoon seasons, while a pronounced decline in monsoonal precipitation is also observed. These findings underscore an increasing likelihood of extreme climatic events, such as glacial lake outburst floods (GLOFs) and droughts, which are exacerbated by the region's inherent topographic sensitivity. The analysis highlights the growing vulnerability of the Garhwal Himalayas and elucidates the evolving climatic patterns within this ecologically sensitive zone. This research offers critical insights for policymakers, conservationists, and other stakeholders engaged in developing resilient frameworks aimed at safeguarding both biodiversity and local livelihoods in the context of escalating climate change impacts.

Keywords:

Climate Change, Mann–Kendall's Test, Sen's Slope Estimator, Trend Analysis

Unseen Toxins: Pollution's Invisible Grip on Global Health

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Abstract:

Pollution is one of the most pressing issues of our time, posing severe threats to human health and well-being. Current data from global studies reveals that air pollution alone is responsible for approximately 7 million premature deaths annually, according to the World Health Organization (WHO). With rising industrialization, urbanization, and fossil fuel use, particulate matter (PM2.5), nitrogen dioxide (NO_2), and sulfur dioxide (SO_2) emissions continue to intensify, exacerbating respiratory and cardiovascular diseases. Moreover, water pollution from heavy metals, pesticides, and industrial waste has contributed to gastrointestinal disorders, neurological issues, and even certain types of cancer. Children and elderly populations are disproportionately affected, with an increased incidence of asthma and other respiratory issues in urban areas.

Emerging research highlights the intricate relationship between pollution and climate change, where greenhouse gases and pollutants amplify health risks by altering weather patterns, worsening heatwaves, and impacting air quality. For instance, studies conducted in 2023 indicate a significant correlation between prolonged exposure to PM2.5 and a 20% increase in mortality from respiratory diseases, with regions in South Asia experiencing some of the highest pollution-linked mortality rates. Health systems worldwide are under strain as they address the escalating costs of treating pollution-related diseases. To mitigate this public health crisis, there is an urgent need for innovative interventions, such as green technology adoption, stricter pollution control policies, and improved public awareness. Solutions like expanding green spaces in urban areas, adopting renewable energy sources, and enhancing waste management practices are essential in reducing pollution's health burden. Furthermore, research-based public health initiatives, including early warning systems and preventive healthcare, can significantly reduce pollution exposure.

In conclusion, pollution is not merely an environmental issue but a profound health crisis demanding immediate, cross-sectoral actions. By addressing the sources and impacts of pollution holistically, societies can pave the way for healthier populations and a sustainable future.

Agronomic Practices for Sustainable Production of Aerobic Rice

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Abstract:

A field experiment was conducted on "Agronomic practices for sustainable production of aerobic rice" during *kharif* 2021 and 2022 at Agronomy Field Unit, Zonal Agricultural Research Station, GKVK, Bengaluru, Karnataka, India. The field experiment consists of twenty treatment combinations replicated thrice with three factors, first factor with two methods of sowing as main plot treatments (S_1-Raised bed and S_2 - Flat bed), second factor with mulching as sub plot treatments (M_0 - Without mulching and M_1-With mulching) and third factor with nitrogen management practices as sub-sub plot treatments [N_1-Nutrient Expert (NE), N_2-Site Specific Nutrient Management (SSNM), N_3-GreenSeeker, N_4-Nano urea and N_5-Recommended Dose of Nitrogen (RDN)] was laid out in a split-split plot design. The pooled data revealed that the raised bed method of sowing recorded significantly higher plant height (101.48 cm), number of productive tillers $plant^{-1}$ (22.28), grain yield (5831 kg ha^{-1}) and straw yield (7181 kg ha^{-1}) over flatbed method. Among mulching treatments, polythene mulching recorded significantly higher plant height (95.78 cm), number of productive tillers $plant^{-1}$ (23.03), grain yield (5999 kg ha^{-1}) and straw yield (7364 kg ha^{-1}) compared to without mulching. Among the nitrogen management practices, Nutrient Expert recorded higher plant height (106.79 cm), number of productive tillers $plant^{-1}$ (24.18), grain yield (6235 kg ha^{-1}) and straw yield (7620 kg ha^{-1}) which was on par with SSNM. Hence, growing of aerobic rice on raised bed with polythene mulching and nitrogen management through Nutrient Expert performed better with higher gross returns (Rs.1,24,472 ha^{-1}), net returns (Rs.79,178 ha^{-1}), BC ratio (2.75) and nutrient use efficiency (47%) compared to flatbed, without mulching and recommended dose of nitrogen. Polythene mulching was found to be effective in saving of labour cost (50%) and water requirement (10%) through lower weed count, weed dry weight and evaporation, respectively.

Keywords:

Aerobic Rice, Raised Bed, Polythene Mulching, Nutrient Expert, Greenseeker

Impact of Vehicular and Air Pollution on Growth and Development of Ornamental Plants in Different Places of Bengaluru City

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Abstract:

As urbanization increases, the natural environment becomes increasingly fragmented and the urban green spaces attain significant importance. Due to urbanization, air pollution became a growing problem. Plantation of pollution tolerant plant species with fast growing habit help to ameliorate the pollution problem. The categorization of plant species on the basis of air pollution tolerance index and morphological parameter was considered as best method to select plants for urban landscaping.

The present investigation entitled "Study the impact of vehicular and air pollution on growth and development of ornamental plants in different places of Bengaluru city" was conducted during 2019-20 and 2020-2021 in the Department of Floriculture and Landscape Architecture, College of Horticulture, Bengaluru, Karnataka. Four different sites were selected namely viz. Public gardens (control), Residential areas, Industrial areas and Highway roads representing different pollution levels. In different locations trees, shrubs and ground covering plants were evaluated during different seasons of the year to assess Air Pollution Tolerance Index, biochemical parameters viz. ascorbic acid, chlorophyll content, pH and relative water content of leaves of each selected plant species growing at different sites.

The APTI value of selected tree species under study, average highest APTI irrespective of seasons and places, was recorded in *Delonix regia* (28.36). The trend of APTI for various species was highest in *Delonix regia* and it was followed by *Spathodea campanulata, Peltophorum pterocarpum Michalia champaca, Dolichandrone platycalyx, Azadirachta indica,* and *Bauhinia parpure*. The APTI values varied significantly with different seasons. The highest APTI value was recorded in winter (24.56) whereas, lowest was found in summer (23.66) season. The APTI value evaluated for the four places varied significantly. The maximum APTI (25.99) value was found at highways and minimum (23.06) at garden area.

The APTI value of selected shrub species under study, among species average highest APTI irrespective of seasons and places, was recorded in *Duranta goldiana* (27.29). The trend of APTI for various species was *Duranta goldiana* which was followed by *Ficus benjamina, Caesalpinia palcherrima, Nerium oleander, Thevetia peruviana, Euphorbia milli* and *Acalypha wilkesiana*. The APTI values varied significantly with different seasons. The highest APTI value was recorded in rainy (25.78) whereas, lowest was found in summer (19.25) season. The APTI value evaluated for the four places varied significantly. The maximum APTI (24.57) was found at highways and minimum (20.80) at garden area.

The APTI value of selected ground cover species, among species average highest APTI irrespective of seasons and places, was recorded in *Bougainvillea spectabilis* (23.12). The trend of APTI for various species was *Bougainvillea spectabilis*. The APTI values varied significantly with different seasons. The highest APTI value was recorded in winter season (19.74), whereas, it was lowest in summer (16.66). The APTI value evaluated for the four places varied also significantly. The maximum APTI (19.69) was found at highways and it was minimum (17.07) at garden area.

Keywords:

Air Pollution, Dust Pollution, Ornamental Plants, APTI Value

Assessment of KC Valley Treated Sewage Water for Quality and Irrigation Suitability at Different Storage Tanks in Kolar District of Karnataka, India

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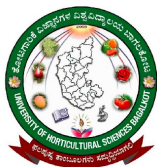
Abstract:

Water is also a source of primary nutrients that sustain life but it is often a limiting factor in successful crop production in semi-arid and arid regions of the world. This necessitates the exploration of various sources of irrigation water in these regions. Kolar is one of the drought-prone districts of Karnataka state and the net groundwater recharge is zero because of highest groundwater extraction. This necessitates the efficient use of all available water sources for agriculture. There is an availability of treated recycled sewage water from Koramangala and Challaghatta (KC) Valley Project. The sewage treatment plants (STPs) filter huge quantities of sewage and the treated water later is pumped to a lake called Lakshmisagar in Kolar district, situated at 45 km away from Bengaluru. From this Lakshmisagar reservoir, the treated water is allowed to flow into a drain network that connects 134 lakes in Kolar and Chikkaballapur districts, for recharging the groundwater aquifers. Water samples from thirty three treated sewage water stored lakes of Kolar district were analyzed for the quality and irrigation suitability at College of Horticulture, Kolar during dry and wet seasons of 2020-21. The results revealed that the wet season stored water had relatively high values of pH, EC and TDS than during dry season. The wet season stored water had a range of 7.12-8.06, 300-640 μmhos cm-1 and 192-410 mg L-1 of pH, EC and TDS, respectively compared to dry season stored water (pH: 6.49-8.47, EC: 240-610 μmhos cm-1 and TDS: 154-390 mg L-1). Among the cations, relatively higher concentrations of calcium and potassium ions were recorded in dry season while, magnesium and sodium ions in wet season. Among anions, relatively higher concentrations of chlorides, bicarbonates and nitrates were found in wet season while, carbonates, sulphates and borate ions in dry season. With respect to heavy metals, relatively higher concentration of lead was found in wet season while, cadmium in dry season however, nickel was not detected in both the seasons. Most of these water samples showed the standards of recommended limits set by Ayers and Wescot (1985), CPCB (1986) and FAO (1994) for irrigation water. The water quality indicators viz., Potential Salinity (PS:1.20-3.80); Residual Sodium Carbonate (RSC:1.60-0.60); Residual Sodium Bicarbonate (RSBC:2.00-2.30); Sodium Percentage (SP:3.70-5.36); Sodium Ratio (SR:0.043-0.800); Sodium Adsorption Ratio (SAR:0.088-0.179); Permeability Index (PI:22.28-68.36) and Magnesium Adsorption Ratio (MAR:11.54-51.43) calculated for dry season and PS:1.40-4.20; RSC:0.30-2.50; RSBC:0.80-3.80; SP:4.45-15.14; SR:0.047-0.183; SAR:0.150-0.213; PI:69.10-124.52 and MAR:22.22-74.41 calculated for wet season indicated that all the water samples were under safe limits for irrigation purpose during both the seasons and they are fit to be used for irrigation purpose.

Keywords:

Treated KC Valley Water, Sewage, Irrigation Quality, Seasons, Heavy Metals

Fertigation Studies in Gypsophila (*Gypsophila paniculata L.*) under Polyhouse Condition

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Abstract:

The experiment entitled "Fertigation studies in gypsophila (*Gypsophila paniculata L.*) under polyhouse condition" was carried out during 2022-2024 in the Regional Horticultural Research and Extension Centre, Bengaluru, Karnataka, India. The experiment was laid out in Randomized Complete Block Design (RCBD) under polyhouse condition with six treatments and four replications. The cultivar Crystal Diamond plantlets were transplanted at 50 cm x 30 cm spacing in raised bed. The fertigation was given at five different levels (50%, 75%, 100%, 125% and 150% of RDF) and straight fertilizers were applied through soil as control. Among different treatments, the significant differences were observed with respect to growth and yield attributes. The results revealed that fertigation with 100 per cent RDF (1923.06 g of N+769.2 g of P+1153.84 g of K/ha) recorded maximum plant height (116.87 cm), plant spread in East-West (62.08 cm) and North-South (66.90 cm) directions, increased number of primary branches (19.86), secondary branches per plant (32.62), increased flower stalk girth (5.98 cm), flower stalk length (71.14 cm), number of cut spikes per plant (18.89) and Minimum days for 50 per cent flowering (114.82 days). The cv. Crystal Diamond took minimum number of days for bud initiation (66.43 days) in treatment fertigation with 50% RDF. It is concluded from the experiment that fertigation with NPK (1923.06 g of N+769.2 g of P+1153.84 g of K/ha) has significantly enhance growth and flowering in gypsophila under polyhouse condition.

Keywords:

Gypsophila paniculata, Fertigation, Growth and Yield Attributes

Response of Biodegradable Urban and Municipal Waste Compost and Its Effect on Growth and Yield Maize (Zea mays L.)

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Abstract:

Maize (*Zea mays L.*) is one of the important emerging cereal crop in India and its area is increasing year by year due to ease of cultivation. It has wider adaptability to diverse agro-climatic conditions and higher productivity potential. Due to this farmers are applying excess amount of chemical fertilizers. Though application of chemical fertilizers helps to increase the production of crop; deterioration of natural resources (viz. land, water and air) is also the side effect of such high input intensive cultivation. As far as the soil health is concerned the application of urban compost as one of the source of plant nutrients and also enhances physical, chemical and biological properties of soil. This can able to replenish the nutrients from the soil to the crop.

A field experiment was conducted at College of Agriculture, V. C. Farm, Mandya, to study the effect of biodegradable municipal waste compost on growth and yield of maize during kharif season of 2021 and 2022. The pooled data of two years revealed that, the grain yield of maize was significantly higher in recommended dose of fertilizer (150:75:40 kg NPK/ha)+Farm yard manure (FYM) @10 t/ha (6995 kg/ha) as compared to no fertilizer application. However, it was on par with application of 50% N as fertilizers+50% N as municipal compost (6954 kg/ha), 25% N as fertilizers +75% N as municipal compost (6815 kg/ha), 100% N as municipal compost (6925 kg/ha), 100% N through vermicompost (6644 kg/ha) and 100% N through FYM (6342 kg/ha). Among the municipal compost treatments, application of 50% N as a fertilizer and remaining 50% N as municipal waste compost recorded significantly higher yield (6954 kg/ha) stover yield (7272 kg/ha), net returns (Rs.50,374/ha) and B:C ratio (2.02).

Keywords:

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Energy Recovery from Poultry Waste to Green Power

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Abstract:

Introduction: Rapid growth of population and industrialization degrades the urban, rural environment and places serious stress on natural resources, which undermines equitable and sustainable development. Inefficient management and disposal of solid waste, poultry waste and food processing waste is an obvious cause of degradation of the environment in most of the village and cities. There is a need to work towards a sustainable waste management system, which required environmental institutional, financial, economic and social sustainability. Keeping in view of the above facts, the present project has been implemented with following objectives.

Objectives:

- Utilization and treating of solid waste generated by poultry waste
- Development of cost effective and eco-friendly biogas technology both in public and private sector.
- To promote sustainable bio-energy and bio-fertilizer production using locally available and generated poultry waste for environmental and economic benefit.
- To improve the overall sanitation and hygiene conditions of poultry farm and reduce energy dependence on the diesel and traditional electricity from grid.
- To create awareness and upscaling the technology to local poultry farm owners by giving training and demonstrations.

Results and Discussion: The present project has been taken with Central Financial Assistance from MNRE – Govt. of India under the public private partnership for installation of biogas power plant. The 2500m3 biogas plant has been installed at Jyothigudde, Kallige Village, Bantwal Taluk, South Canara District for performance evaluation of 250 KW biogas generator.

Conclusion: The present Biogas plant generation about 3271 electrical units per day and 250 KW Biogas generator runs for 10-12 hrs/day. The benefits of Biogas power Generations are independence from irregular and costlier state grid power, reduction in diesel, ensure continuity of electricity due to self-efficiency in power generation, environment friendly and also ensure getting good quality organic manure. It also helps in reducing harmful greenhouse emissions. The success of the poultry farms is a good example to encourage more investment in biogas technology and reaffirm adoption of similar projects in other industries. Although biogas power projects demonstrated a highly successful outcome, most of the poultry farms were not interested due to the high initial investment cost.

To overcome these problems, supporting programmes to educate and promote biogas power projects to the public and private sectors have been provided continuously by the Biogas Development and Training Centers with Central Financial Assistance from Ministry of New and Renewable Energy, Govt. of India. These agencies were instrumental in developing incentives to inspire the poultry and food processing factories to develop biogas-based power projects. The payback period is about 4.5 years without Central Financial Assistance and 3 years with Central Financial Assistance from MNRE – Govt. of India.

Keywords:

Anaerobic Digestion, Green Power, Biogas, Organic Waste

Exploring Bacterial Tolerance in Environments Contaminated with Toxic Metals

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Abstract:

Heavy metal contamination of water bodies is a critical environmental concern, with significant implications for human health and ecosystems. This study aimed to isolate and characterize bacteria resistant to lead (Pb) and cadmium (Cd) in industrial effluents from the south west coast of India. The metal-resistant strains, were isolated and characterised by phenotypic and genotypic method. Additionally, the study explored the co-resistance between antibiotic resistance genes and metal resistance genes in these bacterial strains. Out of 57 isolates, 46 were identified as *Bacillus spp.*, including *Bacillus subtilis* (5) and *Bacillus cereus* (41). Remained were identified as *Pseudomonas aeruginosa*, and *Salmonella spp*. Antibiotic susceptibility testing and PCR were used to detect resistance genes to tetracycline, streptomycin, sulfonamides, chloramphenicol, quinolones, β-lactams, macrolides, and gentamicin. The metal-resistant isolates were further investigated for specific metal resistance genes. The obtained *B. subtilis* carried antibiotic resistance genes, but only 80% exhibited metal resistance genes. In *B. cereus*, 61% of isolates had antibiotic resistance genes, with 44% also possessing metal resistance genes. All *Salmonella* isolates had metal resistance genes, although only 50% contained antibiotic resistance genes. Whereas, *P. aeruginosa* exhibited 71% metal resistance and 57% antibiotic resistance genes. This study provides valuable insights into the prevalence of metal-resistant bacteria in industrial effluents and enhances our understanding of the co-resistance between antibiotic and metal resistance genes.

Keywords:

Anaerobic Digestion, Green Power, Biogas, Organic Waste

Techno-Ecological Studies on Conservation and Management of Lakes and Reservoirs

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Abstract:

Water is susceptible to get contaminated by any foreign matter and this may be either natural or artificial. Any alteration in the physical, chemical and biological properties of water as well as contamination of any foreign substances leads to health hazard. The polluted natural water resources are hazardous to aquatic life and also to human life. The major sources of water pollution are domestic waste from urban areas, rural areas and industrial wastes, which are discharged into natural water bodies.

Reservoirs and lakes occupy a prominent place in the history of irrigation in South India. Tanks are considered to be useful life saving mechanism in the water scarcity areas which are categorized as Arid and Semi-arid zones. The lakes and reservoirs, all over the country without exception, are in varying degrees of environmental degradation. The degradation is due to encroachments, eutrophication and siltation. There has been a quantum jump in population during the last century without corresponding expansion of civic facilities resulting in deterioration of lakes and reservoirs, especially in urban and semi urban areas becoming sinks for the contaminants. The degradation of reservoir and lake catchments due to deforestation, stone quarrying, sand mining, extensive agricultural use, consequent erosion and increased silt flows have vitiated the quality of water stored in the reservoirs. The study area vie., Byramangala reservoir catchment has an areal extent of 340 sq.km,and command area of 28 sqkm It is encompassed by East longitude 770 23'45"- 770 34'16"and North latitude 120 45' 00"- 13002' 40"at a distance of about 40 km from Bangalore.

The paper discusses the physico-chemical and bacteriological studies carried out on surface and ground water and soil in the Byramangala reservoir catchment and the command area. The surface water and ground water in the catchment and command areas were subjected to qualitative analysis for its physical, chemical and biological characteristics. The sampling was done at a monthly interval of three months, i.e., in the month of April2012, September2012, and January 2013.The results of analyses of water samples reveal that water is polluted at certain locations. The max and min values of BOD are 108 mg/l and 48.5mg/l, the COD 264mg/l and86.3mg/l, TDS 1691mg/l and 990 mg/l, DO are 2.5ppm to 1.2 ppm, Water quality Index between 289 to 112.The presence of heavy metals such as Fe, Mn, Zn, Cu, Pb, Cr in vegetation and soil of command area is beyond the permissible limits at certain locations. The total–coliform and faecal-coliform in ground water and surface water at certain locations and reservoir varies between 64×104/100ml to9600/100ml which indicates that water is highly polluted with domestic and industrial effluents. Techno-ecological approaches such as Soil scrape filter.

Keywords:

Urbanization, Reservoir, Irrigation Techniques, Lake Management

Optimization of Avocado Milk Shake Powder for Green Economy and Sustainable Business

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Abstract:

The avocado fruit of domestic varieties have smooth, buttery, golden-green flesh when ripe. Depending on the cultivar, avocados have green, brown, purplish, or black skin, and may be pear-shaped, egg-shaped, or spherical. For commercial purposes the fruits are picked while unripe and ripened after harvesting. The nutrient density and extremely high fat content of avocado flesh are useful to a variety of cuisines and are often eaten to enrich vegetarian diets.

The Box – Behnken Design technique from Response Surface Methodology (RSM) were used to investigate the effects of spray drying conditions on avocado milk shake powder and analyzed physioco chemical parameters moisture content, water activity, loose bulk density, tapped bulk density, colour and pH. The spray drying independent variables and ranges are inlet air temperature (140, 150 and 160), feed flow rate (10, 11 and 12 rpm) and total solids (17, 19 and 21) The complete design was executed in random order and comprised of 15 combinations Experimental data were analysed by multiple regression equation to fit a second-order polynomial model. The coefficients of determination and analysis of variance (ANOVA) were used to evaluate the goodness of fit of the regression model. The best spray drying conditions within the experimental ranges for minimum powder moisture content, water activity, loose bulk density, tapped bulk density,colour (L*, a* b*)and pH varies from 4.32%, 0.200, 0.371, (91.99, -0.523, 11.65) and 6.32, respectively with the optimised conditions of inlet air temperature, feed flow rate and slurry concentration of 150, 11 rpm and 19%, respectively. The desirability of optimised condition is about 0.619 with Design Expert-12.0.3.0. The developed milk shake powder has got business opportunities due to its nutrient contents and storability.

Keywords:

Avocado Pulp, Skim Milk, Skim Milk Powder, Spray Dryer, Green Economy

Ensuring Food Safety in Production: Impacts on Human Health and Ethical Challenges

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Abstract:

Food safety production is a vast subject to study. It is an essential issue for protecting human health and managing ethical concerns within new food organizations and structures. This process contains various stages, like farming, processing, packaging, and distribution. These mentioned stages are the exact places where contamination may occur. Performing safe procedures at each stage, like preserving adequate sanitation and applying secure and safe chemicals, is crucial in monitoring foodborne hazards. These kinds of efforts are required to decrease health hazards and protect general health by emphasizing these problems' significance and importance.

Paying attention to the increasing risks of food contamination and the ethical concerns they cause is essential to achieving safe food in the production process. Improper production processes, contaminated imports, lack of hygiene during production, and other factors may all occur during the production process and cause the unsafe production of a food product, which may expose consumers to the risk of breaching the contract and their right to obtain honest food products. However, it is important to mention that all the steps in the food production chain play an important role in producing safe food. Considering the mentioned issue and ensuring compliance with ethical standards by companies, which is one of the most influential factors, this goal can be achieved. However, it is important to mention that all the steps in the food production chain play an important role in producing safe food. Considering the mentioned issue and ensuring compliance with ethical standards by companies, which is one of the most influential factors, this goal can be achieved. Other cases of food contamination should also be mentioned. In this case, modern agricultural methods often damage the ecosystem and cause increasing concerns about ethical compliance with safe food production and long-term storage.

Nevertheless, scientists have recently been able to highlight the importance of sustainable practices and environmentally friendly and human-health-friendly techniques. Their focus on ethical compliance in safe food production is not just a technical requirement, but a moral responsibility. By providing essential methods and protocols for food production, they are ensuring that this responsibility is met. These practices guarantee the future of the food industry and give us hope for an ethical and sustainable future. They are instrumental in addressing ethical issues in food production and establishing a sustainable food system. It's crucial to remember that food safety is deeply related to human health and ethical issues. By emphasizing this connection, the importance of safe and ethical production approaches for a food item can become more apparent and obvious to defend public health by experts and scientists. These practices are critical to focusing on public health, developing consumer confidence, and promoting sustainability in the food industry, emphasizing the urgency and necessity of these concerns.

Keywords:

Food Safety, Human Health, Ethical Challenges, Production Process, Sustainable Practices

Exploring the Impact of Social Media Factors on Sustainable Consumption Intentions and Environmental Behavior: An Empirical Analysis in Hainan, China

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Abstract:

As a key international tourism consumption center in China, Hainan Province attracts a large number of off-island tourists with its unique environmental resources and policy conditions. Ensuring consumption and environmental sustainability is key to achieving high-quality development in the region; however, it remains a challenge to effectively promote pro-environmental behaviors and sustainable consumption intentions among off-island tourists and on-island citizens. Focusing on the context of social media use, this study explores the multidimensional effects of social media's informational, experiential, and relational functions on pro-environmental behaviors and sustainable consumption intentions using the Technique for Pro-Environmental Action Modeling (TPAM) and the Social Influence Theoretical Framework (SITF) in a multidimensional manner, revealing their important roles in shaping attitudes toward sustainable consumption and promoting pro-environmental behaviors. It also focuses on the moderating role of trust and the mediating role of pro-environmental behavior in these factors and sustainable consumption intentions. The goal is to utilize the power of social media as a catalyst to foster environmentally responsible consumption attitudes and practices.

In this study, a total of 569 valid questionnaires were collected from Hainan islanders and tourists using a quantitative method of structured questionnaires through purposive sampling, and the associations were verified using statistical analysis techniques such as regression and structural equation modeling. It was found that social media use for information , social-emotional experiences and online interpersonal influences had positive relationships on both sustainable consumption intentions and pro-environmental behaviors. The findings suggest that social media not only enhance the public's environmental awareness by providing rich environmental information and green consumption guidelines, but also stimulate the public's active participation in environmental behaviors through emotional experiences and online interpersonal interactions. In addition, pro-environmental behaviors play a significant mediating role between social media use and sustainable consumption intention, suggesting that social media indirectly enhances consumers' propensity to consume sustainably by promoting the practice of specific environmental behaviors. This study provides strategic insights for policymakers, businesses and social organizations. By focusing on enhancing content quality, utilizing emotional engagement and interactions, reinforcing community influence, and creating green marketing strategies, they can effectively utilize social media platforms to raise public awareness about environmental issues and encourage sustainable consumption behaviors.It provides practical guidance for companies to leverage social media for effective green marketing, thereby enriching theoretical research on promoting sustainable consumption practices.

Keywords:

Social Media Use for information, Social Emotional Experience, Online Interpersonal Influence, Sustainable Consumption Intention, Pro-Environmental Behavior

Investigating the Environmental Kuznets Curve: A Dynamic Panel Data Analysis of Economic Growth, Energy Consumption, Urbanization, and Tourism's Impact on Environmental Degradation in Selected Developed and Developing Countries

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Abstract:

The growing concern over global carbon emissions and their impact on climate change has made it crucial to understand the economic and environmental drivers of emissions across different economies. This study aims to explore the long-run and short-run relationships between carbon emissions and key determinants such as income, energy consumption, urbanization, and tourism in a panel of eight selected developed and developing countries from 1990 to 2020. The research applies dynamic panel estimation techniques including Mean Group (MG), Pooled Mean Group (PMG), and Dynamic Fixed Effects (DFE) models to assess these relationships. Rooted in the Environmental Kuznets Curve (EKC) theory, which posits an inverted U-shaped relationship between income and environmental degradation, this study examines whether carbon emissions increase with economic growth up to a certain point and then decrease as economies adopt cleaner technologies. The sample includes data from both developed and developing countries, allowing for a comprehensive analysis of heterogeneous effects across different stages of development. The results reveal the existence of a long-run causality between carbon emissions and its explanatory variables, indicated by the significant error correction terms for all the models tested in this study. The results show evidence that income, energy consumption and urbanisation significantly increase carbon emissions in the long run, while tourism (measured by the number of tourist arrivals) has a significant negative impact on carbon emission. The results also support the Environmental Kuznets Curve (EKC) theory, as it reveals an inverted U-shaped relationship exist between income and carbon emission. The results highlight the need for policies that encourage sustainable urbanization and energy efficiency measures to mitigate the long-term impacts of economic growth on carbon emissions. Furthermore, the negative effect of tourism on emissions suggests that promoting environmentally sustainable tourism could be an effective strategy to balance economic growth with environmental protection.

Keywords:

Carbon Emissions, Environmental Kuznets Curve (EKC), Energy Consumption, Urbanization, Tourism, Dynamic Panel Data Analysis

Exploring Green Purchase Intention for Organic Products: Insights from Young Consumers in Guangzhou City, China

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Abstract:

The rapid growth of global consumption has led to numerous environmental issues, such as resource overconsumption, worsening pollution, and increasing pressure from climate change. Guiding and regulating green consumption intentions and behaviors is crucial for addressing these issues and is also a key approach to achieving United Nation's Sustainable Development Goal 12 (Responsible Consumption and Production). Organic products, which meet consumer needs while minimizing their impact on ecosystems, have become an effective option to address environmental deterioration and improve human health and well-being. This study introduces an enhanced model of the Theory of Planned Behavior (TPB) to critically examine the purchase intentions of young Chinese consumers towards organic food. Data were gathered using purposive sampling through a cross-sectional survey, where participants completed an online self-administered questionnaire. The analysis proceeded with 648 valid responses, providing a robust basis for evaluating the proposed model. Using Smart PLS 4, following a two-step approach: first assessing the measurement model, then the structural model to analyze the relationships between variables, the results reveal that Environmental Knowledge (EK), Green Perceived Attitude (GPA) And Green Perceived Value (GPV), have positive effects on Green Purchase Intention (GPI) of young consumers for organic product in China, while Green Social Influence (GSI) does not. Consumers are more likely to have a positive attitude towards organic products when they have adequate green knowledge which leads to more purchase intention of organic products. The results also revealed that both Green Perceived Value and Green Perceived Attitude play significant roles in mediating the relationship between Environment Knowledge and Green Purchase Intention. The findings of this study suggest that enhancing Environmental Knowledge and leveraging on Green Perceived Attitude and Green Perceived Value are crucial for fostering positive Green Purchase Intention among consumers. Policymakers should focus on initiatives that increase environmental education and promote social norms favoring sustainable consumption. Additionally, strategies that boost consumers' Green Perceived Attitude and Green Perceived Value of green products can further amplify these intentions. Effective policies might include educational campaigns, incentives for green purchases, and measures that strengthen support for sustainable consumption.

Keywords:

Green Purchase Intention, Environmental Knowledge, Green Perceived Attitude, Green Perceived Value, Green Social Influence, Young Consumers

Green Synthesis and Characterization of Copper Nanoparticles Using *Allium cepa L.* Outer Peel Extract: A Comparative Study of Temperature-Dependent Synthesis for Sustainable Nanotechnology

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Abstract:

The small size and large surface area of copper nanoparticles (CuNPs) make them valuable in diverse applications, including energy storage, antimicrobial, environmental remediation, electronics, and healthcare, enabling more efficient, cost-effective, and sustainable solutions in these fields. They are used in printed electronics, water treatment, drug delivery, and coatings, making them highly valuable for sustainable technologies and advanced medical applications. Two different CuNPs were synthesized using the bottom-up approach at 60oC and ambient temperature from outer peels of *Allium cepa L*. The synthesis of CuNPs using the outer peel of *Allium cepa L.* was monitored by observing color changes. A shift to dark brown colour indicated the rapid and spontaneous formation of CuNPs when the phytochemicals of *Allium cepa L* interacted with Cu^{2+} ions. Chemical composition was assessed and characterized using UV–Visible spectroscopy, Fourier Transform Infra-Red (FTIR), X-Ray Diffractometry (XRD), Scanning Electron Microscopy (SEM), Transmission Electron Microscopy (TEM) and Energy Dispersive X Ray Spectroscopy (EDS). The UV-Visible absorption peak at 558 nm confirmed the formation of CuNPs. FTIR revealed O-H (hydroxyl), Cu-H and C-C bonds the main functional groups as reducing agents of Cu ions to CuNPs. The XRD pattern identified the phase-centered crystalline nature of CuNPs. SEM images indicated spherical, mono-dispersed particles with little aggregation for CuNPs synthesized at 60oC and pseudo-spherical large particles for CuNPs synthesized at ambient temperature with TEM images showing polygonal particles, rod-like structures and spherical voids on the surface with diameters ranging from 4.39 to 91.36nm for CuNPs synthesized at 60oC and 6.49 to 182.38nm for CuNPs synthesized at ambient temperature. EDS indicated Oxygen, copper and sulphur as main elements for both CuNPs.

This suggests that CuNPs can be synthesized from outer peels *Allium cepa* under ambient conditions thus enabling a more efficient, cost-effective, and sustainable way of synthesizing CuNPs. By integrating principles of green chemistry with biotechnological approaches, researchers can develop nanoparticles that are not only effective but also safe for human health and the environment.

Keywords:

Copper nanoparticles (CuNPs), Green chemistry, Allium cepa, Characterization, Sustainable synthesis

Influence of Insecticide Usage Pattern on the Development of Insecticide Resistance in the Population of Diamondback Moth, *Plutella xylostella* (L.) (Lepidoptera: Plutellidae)

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Abstract:

Diamondback Moth (DBM), *Plutella xylostella* (Linnaeus) (Lepidoptera: Plutellidae), is the noxious pest of cruciferous crops and attack the crop at all the stages of the plant growth. Outbreaks of DBM can cause 90 per cent yield loss and worldwide annual cost for management was estimated to US $ one billion. The farmers solely depend on synthetic chemical weapon for the management of this pest. In this context, a study was conducted to know insecticide usage pattern by the growers and evolution of resistance in DBM population. A total of 24 different insecticides were used by the growers for the management of DBM across five districts of Karnataka surveyed. The farmers of Kolar district used maximum number of insecticides (62.50 %) followed by Belagavi (54.17 %), Bengaluru Rural (37.54 %), whereas least number of insecticides were used by farmers of Mysuru districts (25.00%). The resistance ratio was computed by dividing the LC50 value (toxicity) of insecticides against field DBM population from the LC_{50} values of insecticides against susceptible DBM population. The mean resistance ratio was found varied across insecticides and also across five districts of Karnataka. The least mean resistance ratio was found for the insecticide, Spinosad 45 SC (1.23 folds) followed by Dichlorvas 76 EC (1.57 folds), Emamectin benzoate 5 SG (1.66 folds) and Cyantraniliprole 10.26 OD (1.77 folds) and highest mean resistance ratio was recorded for Chlorantraniliprole 18.5 SC (5.00 folds) followed by Flubendiamide 39.35 SC (3.60 folds). This clearly suggest that the highest evolution of resistance in field DBM population against Chlorantraniliprole 18.5SC and Flubendiamide 39.35 SC due to more usage by the growers. Similarly, highest mean resistance ratio was registered for the DBM population sampled from Kolar districts (3.25 folds) as compared to other districts and least mean resistance ratio was recorded for the DBM population sampled from Belagavi district (1.23 folds) followed by the population of Bengaluru Rural district (2.13 folds). This outcome, undoubtedly explains that the farmers of Kolar district use the insecticides indiscriminately and farmers of Belagavi district apply the insecticides in judicious way for the management of DBM pest population.

Keywords:

Diamondback moth, *Plutella xylostella*, Population, Insecticides, Resistance, Resistance ratio

Forecasting Solid Waste Generation in Rodriguez, Rizal Using Artificial Neural Network (ANN) And Regression Analysis: An Input to Municipality's Solid Waste Management Plan

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Abstract:

Accurate and reliable forecasting of Municipal solid waste is extremely important for an effective solid waste management plan. Every local government is having a constant review of measure in the implementation of its waste management program to ensure its continuous viability and importance. The main objective of this study was to identify the influential variables and develop a model for accurate forecasting of MSW generation and offer strategic recommendations that will improve waste management practices and policy making in Rodriguez, Rizal. Solid waste collection of the municipality from 2010-2022, the population, number of households, the gross domestic product (GDP), commercial establishments and services (CES), and the tourist arrival from 2010 to 2022 were gathered. Two forecasting methods, the Artificial Neural Network (ANN) and the multivariable linear regression with the use of Principal Component Analysis (PCA) were tested for their ability to predict the annual waste generation in the municipality. Among the five components, population, Household, and Commercial Establishments have the highest eigenvalues and it account for almost 86% of the total variance in the original data. Furthermore, these components, present the lowest p-values; to which regression model was developed. Artificial Neural Network (ANN) model was developed using Multilayer-perceptron Neural Network. The same factors with normalized importance were identified, the Population, Household and Commercial Establishments. Result showed that Artificial Neural Network (ANN) outperformed regression analysis in predicting the solid waste generation having lower values in terms of the root mean square error (RMSE), mean error (ME), mean absolute deviation (MAD), mean percentage error (MPE), and mean absolute percentage error (MAPE). A strategic measure has been recommended to enhance waste management practices and policy-making of the municipality of Rodriguez that will improve the efficiency and effectiveness of its waste management practices and reduce environmental impacts.

Keywords:

Forecasting, Municipal Solid Waste (MSW), Multivariate Linear Regression, Artificial Neural Network (ANN), Multilayer Perceptor (MLP)

Integrating Agroforestry for Sustainable Agriculture: A Case Study of Nagaon District, Assam

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Abstract:

Assam, located in the north-eastern part of India, is a state with a predominantly agrarian economy. is Nagaon district of Assam, also known as the rice bowl of Assam, falls precisely at the very center of the entire North-East. Sedentary smallholder farming is prevalent, mostly because the majority of the farmers possess landholdings typically ranging from less than 1 hectares to few hectares resulting in low yields and income. Various biophysical and socioeconomic issues are causing hinderance to the agricultural productivity of Assam. This issue is addressed by introducing diversification in agroecological systems. By building on the state's rich biodiversity, traditional knowledge, and community-oriented practices, agroecology can contribute to food security, environmental conservation, and the well-being of rural communities. This paper attempts to present the different types of traditional agroforestry systems carried in the area, understand the relationship between socioeconomic status of the farmers and agroforestry systems adopted and biological and economic returns of different agroforestry systems in Nagaon District of Assam. A questionnaire survey was conducted in three villages with 300 respondents including farmers, women and youth. Broadly existing agroforestry system of the study area has been categorized: Agri silvicultural and Agri-silvi-horticulture, silvipastoral and silvihorticulture systems. Diagnostic survey carried out in the study area focused on the hindrances faced by the farmers.

Keywords:

Agroforestry, Trees Outside Forests(TOF), Sustainable Agriculture

The Predictors of Green Purchase Intention for Electric Vehicles: A Mediation Analysis of Chinese Working Adults in Shanghai, China

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Abstract:

The growing demand for electric vehicles is crucial in reducing carbon emissions, yet consumer adoption remains slow despite their environmental benefits. This discrepancy underscores the critical need to investigate green purchase intentions, as broad adoption of electric vehicles is essential for advancing Sustainable Development Goal 13 (Climate Action). Immediate research is needed to identify and address the barriers influencing consumer behavior, as accelerating the transition to electric vehicles is crucial for mitigating climate change, reducing reliance on fossil fuels, and promoting a sustainable energy future. However, encouraging consumer adoption of electric vehicles remains a significant challenge. This study investigates the key factors influencing Green Purchase Intention (GPI) in the context of electric vehicles, focusing on Environmental Knowledge (EK), Perceived Behavioral Control (PBC), and Social Media (SMM) as exogenous variables, with Subjective Norm (SN) and Green Perceived Value (GPV) serving as mediators. Grounded in the Theory of Planned Behavior (TPB) and the Value-Belief-Norm (VBN) Theory, the research aims to understand how these variables shape consumers' intentions to purchase electric vehicles.

A total of 429 valid responses were obtained from working adults in Shanghai through a purposive sampling method. A rigorous quantitative analysis was conducted using partial least squares structural equation modelling (PLS-SEM) to assess the relationships between the variables. The findings revealed that Green Perceived Value, Subjective Norms and Perceived Behavioral Control have a significant influence on Green Purchase Intention of electric vehicles, while Environmental Knowledge and Social Media do not. Green Perceived Value and Subjective Norms were also found to be significant mediators in explaining the relationships between Environmental Knowledge and Green Purchase Intention and Social Media and Green Purchase Intention respectively.

The significant impact of Green Perceived Value, Subjective Norms, and Perceived Behavioral Control on Green Purchase Intention underscores the need for policies that enhance the perceived value of electric vehicles, leverage social influence, and strengthen individuals' control over their purchasing decisions. Given that Environmental Knowledge and Social Media did not show direct influence, policymakers should focus on strategies that improve the perceived benefits of electric vehicles and actively engage influential social networks to shape consumer attitudes. Additionally, since Green Perceived Value and Subjective Norms are effective mediators, targeted interventions that highlight the environmental and social advantages of electric vehicles could amplify their appeal and drive higher adoption rates. By addressing these factors, policies can better align with consumer motivations and accelerate the transition towards more sustainable transportation options.

Keywords:

Green Perceived Value, Perceived Behavioral Control, Green Purchase Intention, Subjective Norm

The Impact of Green Human Resource Management on Turnover Intentions of Millennial Employees in Shanghai, China

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Abstract:

As the global climate crisis intensifies, companies face not only the pressure of fulfilling environmental responsibilities but also the challenge of maintaining employee stability, particularly in managing millennial employees. Millennials have higher expectations regarding their companies' human resource management practices and sustainable performance, making Green Human Resource Management (GHRM) a crucial strategy for attracting and retaining talent while promoting sustainable development. This study focuses on millennial employees in Shanghai, China, and examines the direct and indirect impacts of four critical GHRM practices—Green Recruitment and Selection, Green Training, Green Involvement, and Green Rewards—on the turnover intentions of millennials in Shanghai.

This study employed a quantitative research method, surveying 393 millennial employees in Shanghai, and applied PLS-SEM to analyze the relationships between the variables. The results indicate that Green Recruitment and Selection, Green Training, Green Involvement, and Green Rewards all have significant direct negative effects on employee turnover intentions. Additionally, Green Involvement and Green Rewards indirectly reduce turnover intentions through the serial mediation of employee engagement and job satisfaction, demonstrating their effectiveness in enhancing employee engagement and satisfaction.

This research provides new empirical support for the GHRM field and offers practical management strategies for companies to address environmental management and reduce employee turnover. It also establishes an important theoretical foundation for future research on the complex interactions between GHRM practices and employee behavior, further advancing the field of sustainable human resource management.

Keywords:

Turnover Intentions, Job Satisfaction, Green Recruitment and Selection, Green Training, Green Involvement, Green Rewards, Millennials

The Role of Corruption Control and Financial Markets in Advancing Green Economy Transitions: An Empirical Analysis of CO2 Emissions in Emerging Economies

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Abstract:

Purpose: This study aims to evaluate the influence of corruption control and financial markets on the green economy transition, with particular emphasis on the role of CO2 emissions, including per capita emissions, in this process.

Design/Methodology/Approach: Using panel data from 28 emerging economies spanning the period 2003–2020, this research applies GMM regression models to analyze the effects of corruption control and financial markets on CO2 emissions. Key indicators include corruption control and financial market performance in relation to environmental outcomes.

Findings: The analysis reveals that both corruption control and well-functioning financial markets significantly contribute to the reduction of CO2 emissions, suggesting that improvements in governance and financial infrastructure are critical for advancing the green economy transition. Additionally, the study highlights the role of these factors in facilitating the implementation of effective environmental policies, further supporting the goals of sustainable development.

Originality/Value: This research provides empirical evidence supporting the green economy transition in emerging economies, addressing a gap in the literature concerning the governance-environment nexus. The findings offer valuable insights for policymakers, academics, and environmental governance practitioners, particularly in the context of global climate change mitigation and sustainable development promotion.

Keywords:

Green Economy Transition, Corruption Control, Financial Markets, CO2 Emissions, Emerging Economies

Optimizing Spacing and Nutrient Management for Enhanced Fiber Yield in Hemp (*Cannabis sativa ssp. sativa*) Cultivation under Indian Conditions

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Abstract:

Hemp (Cannabis sativa ssp. sativa) has garnered significant interest due to its wide range of applications across industries. However, the limited scientific research on hemp crop management in India has restricted its cultivation. This study presents the first-ever report on crop management practices under Indian conditions, specifically examining spacing and nutrition effects on growth and fiber yield. Hemp plants were cultivated with six different spacing configurations: 10×5 cm, 10×10 cm, 15×5 cm, 15×10 cm, 20×5 cm and 20×10 cm. These were combined with four nutritional treatments: 75, 100 and 125 per cent of the recommended dose of fertilizer (RDF followed elsewhere) with plant growth-promoting rhizobacteria (PGPR) consortia, and 100 per cent RDF alone. This experiment followed a factorial randomized complete block design with twenty-four treatments, each replicated twice. Among the spacings, 10×10 cm yielded the highest dry weight of female stalks (0.98 kg m⁻²), total stalk dry weight (1.34 kg m⁻²), fiber yield from female stalks (80.38 g m⁻²) and fiber recovery (19.85%), with plants producing long stems desirable for fiber production, benefitting the fiber industry. In terms of nutrition, plants supplemented with 10 t ha⁻¹ of farmyard manure (FYM) and 125% RDF (250:125:250 kg NPK ha⁻¹) plus PGPR consortia achieved the greatest plant height (217.18 cm), stem diameter (14.65 mm), male stalk dry weight (0.33 kg m⁻²), female stalk dry weight (0.99 kg m⁻²), total stalk weight (1.32 kg m⁻²), male stalk fiber yield (176.08 g m⁻²), and total fiber yield (237.67 g m⁻²) at harvest. In interactions, plants spaced at 10 × 10 cm with 250:125:250 kg NPK ha⁻¹ and PGPR consortia exhibited the highest fiber yield (287.00 g m⁻²). These findings indicate that a spacing of 10 × 10 cm combined with 10 t ha⁻¹ FYM and 125% RDF (250:125:250 kg N, P₂O₅, K₂O ha⁻¹) with PGPR consortia can produce fiber-rich stems suited for industrial use, supporting fiber production efforts in India.

Keywords:

Hemp, *Cannabis sativa*, Fiber, Spacing, Nutrition, PGPR Consortia

Recovery of Titanium from Red Mud Waste (Bauxite Residue)

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Abstract:

Hemp (Cannabis sativa ssp. sativa) has garnered significant interest due to its wide range of applications across industries. However, the limited scientific research on hemp crop management in India has restricted its cultivation. This study presents the first-ever report on crop management practices under Indian conditions, specifically examining spacing and nutrition effects on growth and fiber yield. Hemp plants were cultivated with six different spacing configurations: 10×5 cm, 10×10 cm, 15×5 cm, 15×10 cm, 20×5 cm and 20×10 cm. These were combined with four nutritional treatments: 75, 100 and 125 per cent of the recommended dose of fertilizer (RDF followed elsewhere) with plant growth-promoting rhizobacteria (PGPR) consortia, and 100 per cent RDF alone. This experiment followed a factorial randomized complete block design with twenty-four treatments, each replicated twice. Among the spacings, 10×10 cm yielded the highest dry weight of female stalks (0.98 kg m^{-2}), total stalk dry weight (1.34 kg m^{-2}), fiber yield from female stalks (80.38 g m^{-2}) and fiber recovery (19.85%), with plants producing long stems desirable for fiber production, benefitting the fiber industry. In terms of nutrition, plants supplemented with 10 t ha^{-1} of farmyard manure (FYM) and 125% RDF (250:125:250 kg NPK ha^{-1}) plus PGPR consortia achieved the greatest plant height (217.18 cm), stem diameter (14.65 mm), male stalk dry weight (0.33 kg m^{-2}), female stalk dry weight (0.99 kg m^{-2}), total stalk weight (1.32 kg m^{-2}), male stalk fiber yield (176.08 g m^{-2}), and total fiber yield (237.67 g m^{-2}) at harvest. In interactions, plants spaced at 10 × 10 cm with 250:125:250 kg NPK ha^{-1} and PGPR consortia exhibited the highest fiber yield (287.00 g m^{-2}). These findings indicate that a spacing of 10 × 10 cm combined with 10 t ha^{-1} FYM and 125% RDF (250:125:250 kg N, P$_2$O$_5$, K$_2$O ha^{-1}) with PGPR consortia can produce fiber-rich stems suited for industrial use, supporting fiber production efforts in India.

Keywords:

Hemp, *Cannabis sativa*, Fiber, Spacing, Nutrition, PGPR Consortia

Analysis of Willingness to Pay (WTP) to Support the Sustainability of Coral Reef Ecosystem in Wediombo Marine Protected, Gunungkidul

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Abstract:

The coral reef ecosystems are important ecosystem since it has several services to human and environment around. However, the area still faces environmental degradation issues due to lack of community awareness and suboptimal management. This study aimed to determine the amount of Willingness to Pay (WTP) that tourists and communities are willing to pay to protect the sustainability of coral reef ecosystem in in the Wediombo Marine Conservation Area. The data used in this study consist of secondary data and primary data obtained structured interviews with 67 tourists, and 48 community members. The sample sizes were determined using purposive random sampling for community members and accidental sampling for tourists. Processing and analysis were conducted using Contingent Valuation Method (CVM) and comparison the WTP value of tourists and community member. The results of this study are the WTP of the coral reef ecosystem in the Wediombo Marine Conservation Area are shows that the WTP value from tourists is higher from community members as much as Rp1.190.791.429 per year from community members and Rp2.325.840.000 per year from tourists.

Records of Mercury and Trace Element Deposition in Lake Limboto, Gorontalo Province, Indonesia

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Abstract:

Historical records of trace elements in lake sediments offer insights into the sources and deposition of potentially toxic pollutants over time and across regions. In some previous studies, it has been known that Gorontalo Province has several small-scale gold mining areas which indicate that the source of mercury contamination comes from gold processing in these mining activities. In this study, we investigated Lake Limboto, located in Gorontalo Province, Indonesia, to understand how mercury and trace element fluxes are influenced by the region's geology, watershed erosion, and local point sources and atmospheric deposition. The high sedimentation rate and presence of varved sediments make Lake Limboto an ideal site for studying the historical pollution of mercury and other metals in the region. The coring sediment samples of Lake Limboto was taken to analyzed a suite of metals as well as Cu, Zn, Sb, Pb, As, and Hg. The Hg concentration shows an inverse pattern with other elements. This also shows that the particle size has a significant role in the accumulation and enrichment of Hg in the sediments. In 1932 the depth of Lake Limboto was around 30 m. When compared to the data in 2023, the depth of Lake Limboto reached 4 m only. Assuming that the sediment influx is constant every year, it is estimated that the sediment deposition on the bottom of Lake Limboto has increased by about 3.5 meters/year. Geochemical analysis of sediment material taken from three core-log indicates that the concentrations of mercury and other elements were not only detected in the surface layer but were also detected up to a depth of 20 m. This imply that the presence of mercury and other elements was the result of years of accumulation from natural and anthropogenic processes.

Keywords:

Lake Limboto, Sedimentation, Mercury, Trace Element

Dissection of Genetic Attributes Among Yield and Quality Traits in F2 Population of Bottle Gourd (*Lagenaria Siceraria* (Mol.) Standl.)

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Abstract:

The present investigation "Dissection of genetic attributes among yield and quality traits in F2 population of bottle gourd" aimed to assess the genetic variability, correlation, path analysis and identify desirable transgressive segregants in the two bi-parental crosses of bottle gourd: PSPL×Pusa Sandesh and IC342079×Pusa Sandesh (selected on basis of heterosis for yield) at farmer's field, Dasanayakanahalli, Yelahanka, Bengaluru, during *summer* 2024. High genotypic and high phenotypic coefficient of variation (GCV and PCV) was noted for fruit yield per vine, node number at which first female flower appear and vine length in both the F2 populations. High heritability coupled with high genetic advance as per cent of mean (GAM) was observed for vine length, number of primary and secondary branches per plant, node number at which first male and female flower appear and average fruit weight indicating, significance of additive gene action. Correlation studies revealed fruit yield per vine exhibited positive significant association with average fruit weight, number of fruits per vine, number of primary branches and sex ratio in both populations. Average fruit weight manifested highest positive direct effect on fruit yield per vine followed by number of fruits per vine in both populations underscoring their importance for enhancing overall yield in bottle gourd. Higher number of transgressive segregants were observed in PSPL×Pusa Sandesh with promising lines A-118, A-109, A-20, A-145, A-143, while B-148, B-105, B-196, B-2, B-16 were identified in IC342079×Pusa Sandesh.

Keywords:

Genetic Attributes, Bottle Gourd, F2 Population

Innovative Technologies to Recycling Waste

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Abstract:

If waste is Gold if it is properly held". In India is second fastest growing economy and second populated country in the world. The most population lives in urban areas and has rise the rate of migration has rise rural areas to urban areas. The expected migration has rise 44 % in 2026. The percentage waste materials have increase with the increase the population. Issue is not a pubic knowledge to compose the waste materials but considered to better compose. Effective waste management is essential for maintaining environmental sustainability, public health, and resource conservation in an increasingly urbanized and industrialized world. This paper explores the methods, challenges, and innovations in waste management, emphasizing integrated approaches that combine waste reduction, recycling, and proper disposal. It discusses the environmental impacts of improper waste handling, including pollution, greenhouse gas emissions, and harm to ecosystems. The study also highlights the role of advanced technologies, such as waste-to-energy systems, smart waste bins, and circular economy models, in enhancing efficiency and minimizing waste generation. Furthermore, the importance of public awareness, policy enforcement, and collaboration between governments, industries, and communities in addressing global waste management issues is examined. By adopting sustainable practices and innovative solutions, societies can achieve significant progress toward reducing waste and promoting a cleaner, greener planet and go green before green goes.

Keywords:

Waste Products, Environment, Recycling, Waste-To-Energy Systems

Qualitative Analysis of Bioactive Compounds in Different Plant Parts of Soursop (*Annona muricata* L.)

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Abstract:

Medicinal plants are crucial in global primary health care, with about 80 per cent of the population, particularly in developing countries, relay on traditional remedies. Soursop (*Annona muricata L.*), a member of the Annonaceae family, is widely recognized for its spectrum of phytochemical composition and medicinal value. Originally native to tropical America, soursop is now distributed in tropical regions worldwide, including parts of India. Traditionally used to treat ailments ranging from diabetes and cancer to liver disorders. These therapeutic effects are attributed to bioactive molecules in its leaves, seeds, bark and roots, which demonstrate antitumor, antidiabetic, antiparasitic and pesticidal properties. The effectiveness of these bioactive compounds largely depends on the solvents used for extraction. Phytochemical analysis of various plant parts of soursop, including leaves, bark, seeds, pulp and rind using solvents of different polarities (water, ethanol, methanol and hexane) has identified a broad range of compounds. Among these are alkaloids, phenols, flavonoids, tannins, terpenoids, anthraquinones and coumarins, each with unique pharmacological potentials. Results indicated that polar solvents like ethanol, methanol and water were more effective in extracting alkaloids across all plant parts, while non-polar solvent hexane is particularly effective in extracting alkaloids from leaves, bark and seeds. Phenols are most commonly extracted with ethanol, methanol and water irrespective of plant parts. Flavonoids are readily extracted from all plant parts using ethanol and methanol, aqueous medium shown specificity to leaves, bark and pulp, while hexane shown specificity to rind and pulp. Further analysis shown that tannins are found in methanolic and aqueous extracts of leaves, bark, rind and seeds, while terpenoids shown their presence in ethanolic and methanolic extracts of all parts and aqueous extracts of leaves, rind and pulp. Anthraquinones are present in aqueous extracts of all parts, while ethanol and methanol were effective in extracting from fruit pulp. Coumarins were found in ethanol and methanol extracts across all parts, while hexane is confined to extract from leaves and bark. This study underscores the importance of solvent choice in extracting specific bioactive compounds from various plant parts of soursop, revealing how different solvents affect the phytochemical profile and potentially enhance its therapeutic applications. By understanding the specificity of solvents to phytochemical constituent, researchers can optimize soursop extracts for targeted medicinal usage.

Keywords:

Annona muricata, Bioactive Constituents, Plant Parts, Solvents

Impact of Air Pollution on Human Health in India

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Abstract:

In India one of the era's Air pollution is a major environmental issue that poses serious health risks to human worldwide. According to the air quality monitoring data across worldwide, India is adverse affect by air pollution. Among the 30 most polluted cities listed in 2023 world ranking, 22 are located in India. New Delhi has the most pouted city in India. Thus, more than 660 million Indians breathing problem by polluted air and suffer from various health problems. In India, Air pollution have affect in living urban areas where most of people acts outdoor activities, then many pollutants such as carbon monoxide, sulfur dioxide, volatile organic compounds, dioxin, heavy metals lead etc that the major factor that create a disease in human beings. The present studies show that air pollution has also increase the risk of respiratory infection, chronic obstructive pulmonary disease, heart disease, stroke and lung cancer.

Keywords:

Air Pollution, Health Risks, Environmental Issues

The Antecedents of Eco-Entrepreneurial Intentions and Eco-Entrepreneurial Behaviour: The Moderating Role of Entrepreneurship Education

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Abstract:

The growing global concern regarding environmental sustainability has heightened the importance of understanding the factors that drive eco-entrepreneurial intentions and subsequent eco-entrepreneurial behaviour. This study aims to explore the antecedents of eco-entrepreneurial intentions and behaviour in the context of the United States, with a particular focus on the moderating influence of entrepreneurship education. It aligns with the United Nations' SDG 8 on Decent Work and Economic Growth, as eco-entrepreneurship promotes job creation, innovation, and sustainable economic development while ensuring environmental stewardship. Drawing on the Theory of Planned Behaviour, this research examines the role of three key antecedents—eco-entrepreneurial attitude, subjective norms, and perceived behavioural control—in shaping eco-entrepreneurial intentions and how these intentions translate into actual eco-entrepreneurial behaviour. The data for this study were drawn from a diverse sample of aspiring and existing entrepreneurs of various types in the United States. Findings suggest that eco-entrepreneurial attitude and perceived behavioural control are significant predictors of eco-entrepreneurial intentions. Furthermore, entrepreneurship education served as a crucial moderating factor in the relationship between perceived behavioral control and eco-entrepreneurial intentions, amplifying their association and increasing the likelihood of intentions being transformed into actual eco-entrepreneurial behaviors. The findings provide valuable insights for policymakers and educators, suggesting that integrating eco-consciousness into entrepreneurship curricula can foster a new generation of environmentally responsible entrepreneurs.

Keywords:

Eco-Entrepreneurial Intentions; Sdg8; Entrepreneurship Education; Environmentally Responsible Entrepreneurs

Harnessing Genetic Variability and Trait Association in Vegetable Mesta (*Hibiscus cannabinus L.*): A Foundation for Future Breeding

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Abstract:

Investigation was conducted on the genetic variability and character association of yield-related traits in 24 locally collected accessions of mesta (Hibiscus cannabinus L.) based on the data obtained over three season (2023-24), with a focus on its potential as a vegetable crop. Analysis of variance revealed that there was a significant difference between the genotypes as well as their interaction with environment (G x E). Thus, further analysis was carried out separately for each season for better understanding. Among all seasons, the expression levels of all morphological traits were remarkable in kharif season. Therefore, variability and correlation path analyses were conducted separately for each season data. Higher levels of genotypic coefficient variance (GCV) and phenotypic coefficient of variance (PCV) was observed for all the traits except dry weight of the leaves, which had shown moderate level of variances. Magnitude of heritability (h^2 bs) coupled with genetic advance over mean was observed to be higher for all the traits of which, foliage yield per plant had the highest record. Yield of foliage had strong positive correlation with every trait except number of branches. On the other hand, physiological loss in weight exhibited negative non-significant association with foliage yield of mesta. Positive association indicates the simultaneous improvement of the associated traits. Herbage yield of the mesta can be increased by indirect selection via stem diameter, dry weight of the leaves and plant height due to their direct positive effect on foliage yield (Path analysis). Based on the yield criteria, genotypes viz., UHSB-M-5, UHSB-M-20, UHSB-M-7 and UHSB-M-22 can be selected for future breeding programs. With this basic information on mesta, a breeder can decide the breeding methodology and further crop improvement programs.

Keywords:

Vegetable mesta, *Hibiscus cannabinus*, seasons, genetic variability, UHSB-M-1

Sustainable Agricultural Technology on Poverty Reduction: The Case Analyysis of Vietnam: Thanh Hoa Province

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Abstract:

Poverty alleviation has become a heated issue of developing nations over the world. There is the relationship between agricultural technology business and poverty in most developing countries. Clearly, Viet Nam is a traditional and conventional agriculture nation accompanying with 85% of population in rural areas (CIA, 2014). The selected nations highlighted the importance of agricultural technology business and sustainable development goals in poverty eradication. Additionally, there are several studies elaborating on technology on agriculture, however, there is still lack of sustainable agriculture development since technology has some several effects on environment. The paper argues that applying the sustainability technology is accompanying with sustainable agriculture culture since this agriculture keep culture and solving poverty eradiction sustainably. Applying OLS regression analysis and the double difference methods to estimate the unconditional treatment effect of sustainability technology on business. In further, the study conducts various focus group discussion sessions with the experts, respondents to highlight key constraints while applying sustainability or green technology. In sum, this research suggested that those adopters need to enrich understanding the technological know-how of new agricultural technologies.

Keywords:

Research on the Impact of Outward Foreign Direct Investment and Green Technology Innovation: An Analysis of the Moderating Effect of Institutional Distance

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Abstract:

In the context of accelerated globalization, the international economic landscape is experiencing profound and unprecedented shifts, driven in part by the dynamic rise of emerging markets, which are contributing fresh momentum to global economic growth. Among these, Chinese outward foreign direct investment (OFDI) has played a pivotal role, not only in transforming and upgrading the domestic economy but also in exerting a far-reaching and transformative influence on the global economy. Yet, as environmental challenges intensify, the focus on green technology innovation has gained paramount importance. As a critical instrument for harmonizing economic progress with environmental sustainability, green technology innovation is increasingly recognized as essential for fostering long-term, balanced development. This emphasis is particularly relevant for China, where the need for sustainable development paths has become more pronounced. Substantial technology transfer and diffusion frequently occur in OFDI, facilitating access to advanced green technologies and sustainable development practices. Therefore, examining the impact of OFDI on China's green technology innovation is not only crucial for guiding the nation's transition toward a green economy but also for reinforcing global efforts toward sustainable growth. Understanding this relationship can provide key insights into how China might navigate the challenges of ecological preservation while sustaining its economic leadership in the global arena.

However, the relationship between OFDI and green technology innovation is not simply linear, but is influenced by the interweaving and regulation of multiple complex factors. With Absorptive Capacity Theory, the R&D investment and executives' environmental protection background as two key elements of internal absorption capacity of enterprises for OFDI, directly affect the level and speed of green technology innovation in terms of both quality and quantity. Based on institutional theory, institutional distance also plays an important moderating role in the relationship between OFDI and green technology innovation, jointly forming a complex network that affects the relationship between OFDI and green technology innovation. The revelation of its internal mechanism cannot be ignored.

Building on the aforementioned context, this paper investigates the impact of OFDI on green technology innovation, utilizing 515 listed firms from the Shenzhen Stock Exchange database in China, specifically selecting those engaged in OFDI activities from 2012 to 2021. Firstly, the study uses Zero-Inflated Negative Binomial model to investigate the relationship between OFDI and green technology innovation. Second, it assesses the role of firms' internal absorptive capacity in enhancing green technology innovation. Finally, an empirical analysis is conducted to explore the moderating effect of institutional distance on the relationship between OFDI and green technology innovation. The findings reveal that: (1) OFDI significantly has a positive impact on green technology innovation; (2) R&D investment and executives' environmental protection background also positively influence the green technology innovation; (3) both formal and informal institutional distances negatively moderate the relationship between OFDI and green technology innovation, thereby constraining its advancement. Based on these empirical results, several targeted policy recommendations are proposed: (1) continuously optimize the structure of OFDI to simultaneously enhance the quantity and quality of green technology innovation; (2) strengthen firms' internal absorptive capacities to support green technology innovation and transformation; (3) improve the external institutional environment for investments and leverage the spillover effects of green technology innovation; (4) foster collaboration with local institutions, promote knowledge sharing and technology transfer, and mitigate resistance from informal institutions.

Keywords:

Outward Foreign Direct Investment, Green Technology Innovation, Institutional Distance, Research And Development, Environmental Protection Background, Zero-Inflated Negative Binomial Model

The Impact of Green Human Resource Management on Corporate Sustainable Performance

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Abstract:

Purpose: This study aims to explore the impact of green human resource management practices (green recruitment, green training, green rewards, and green performance evaluation) on corporate sustainable performance. By analyzing different green HRM practices, the study reveals their critical role in helping companies achieve sustainable development goals.

Design/Methodology/Approach: A quantitative survey design was employed in this study, collecting cross-sectional data from 200 manufacturing companies. 300 structured questionnaires were distributed, and 253 complete and valid responses were received from HR managers and directors. To ensure scientific rigour and the reliability of the results, the data were analyzed using Smart PLS-SEM (Partial Least Squares Structural Equation Modeling). Measurement and structural models were developed to verify the reliability and validity of the tool and test the research hypotheses.

Findings: The data analysis results indicate that the research tool demonstrated good performance in terms of composite reliability, factor loadings, Cronbach's alpha, and average variance extracted (AVE), meeting statistical standards. The structural model results confirmed that all hypotheses were supported, revealing a significant positive relationship between green recruitment, green training, green rewards, and green performance evaluation, and corporate sustainable performance. This implies that implementing green HRM practices contributes to enhancing a company's performance across environmental, social, and economic dimensions of sustainability.

Originality/Value: The originality of this study lies in its empirical verification of the positive impact of green HRM practices on corporate sustainable performance. It provides practical guidelines for corporate management, emphasizing the importance of green recruitment, training, rewards, and performance evaluation in driving sustainable outcomes, and establishes a solid foundation for future research. By optimizing these practices, companies can more effectively address growing environmental pressures and gain a competitive advantage in the global sustainability race.

Keywords:

Green human resource management, Corporate sustainable performance, PLS-SEM

Green Algae: An Eco-Friendly Solution for Heavy Metal Removal from Waste Water

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Abstract:

Green algae are an effective, eco-friendly method for removing heavy metals from wastewater. Many human activities, such as industrial activities, often release metals like lead, mercury, and cadmium into water, posing environmental and human health risks. Traditional methods for cleaning wastewater can be expensive and create harmful by-products. In contrast, using green algae for biosorption offers a sustainable and cost-efficient alternative. Biosorption is when algae absorb and trap heavy metals from contaminated water. Green algae, with their large surface area and unique cell structures, are highly efficient in binding metals such as copper, zinc, and nickel. This green process helps clean the water without introducing additional pollutants, making it safer for ecosystems. The advantages of using green algae for wastewater treatment are clear. Algae are natural, widely available, and easy to grow, making them a renewable and low-cost resource. The process is environmentally friendly, does not produce toxic by-products, and contributes to a cleaner and healthier water supply. Additionally, green algae can be cultivated in large quantities with minimal resources, reducing the environmental impact of wastewater treatment. Green algae provide an excellent solution for removing or reducing heavy metals from wastewater. This method not only helps industries manage pollution but also supports broader environmental sustainability efforts.

Keywords:

Green Algae, Heavy Metals, Water Safety, Bio-sorption, Human Health, Food Safety

The Influence of Environmental and Eco-Label Knowledge on Pro-Environmental Consumer Behavior: A Mediation Analysis of Attitude and Green Trust in Eco-Friendly Household Products in Jiangsu Province, China

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Abstract:

The world is grappling with critical environmental issues such as extreme weather events, climate change, waste accumulation, biodiversity loss, and pollution of natural ecosystems. Addressing these challenges, particularly through the frameworks of SDG 12 (Responsible Consumption and Production) and SDG 13 (Climate Action), is essential not only to protect the planet but also to safeguard human well-being, as environmental degradation can cause physical and mental health problems, limit human potential, and exacerbate vulnerabilities to disasters. In light of increasing environmental challenges and an immediate demand for sustainable practices, it is important to assess how consumers' environmental knowledge and recognition of eco-labels impact their shopping preferences. The aim of this study is to examine the impact of environmental knowledge and eco-label knowledge on Chinese consumers' pro-environmental behavior toward eco-friendly products, with attitude and green trust serving as mediators. A quantitative research design was employed, utilizing an online survey to gather data from 578 consumers in the Jiangsu province of China through purposive sampling. The proposed model was tested using Partial Least Squares Structural Equation Modelling (PLS-SEM). Findings indicate that environmental knowledge, eco-label knowledge, attitude, and green trust are significant predictors of pro-environmental behavior. Additionally, attitude and green trust act as significant but partial mediators. This study offers essential insights for companies seeking to educate consumers on the significance of eco-labels, thereby raising awareness of sustainable practices and encouraging more informed purchasing decisions. It highlights the critical role eco-labels can play in shaping pro-environmental behavior among Chinese consumers, especially when prominently featured on packaging and integrated into broader marketing strategies to enhance brand loyalty and appeal to eco-conscious buyers. Furthermore, the research deepens our understanding of how environmental awareness programs, when coupled with user-generated content and eco-labeling, can collectively influence and potentially amplify pro-environmental behavior in China. However, while these findings are promising, they also suggest that companies must invest more in consumer education and transparent marketing to fully leverage the benefits of eco-labeling.

Keywords:

Environmental Knowledge, Eco-Labels, Pro-Environmental Behavior, Green Trust, Attitude

The Impact of Green Perceived Attitude, Trust, and Perceived Behavioral Control on Green Purchase Intention and Behavior: Evidence from Hainan's Green Tourism

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Abstract:

As a key ecological tourism destination in China, Hainan Province leverages its abundant natural resources and governmental policy support to vigorously promote green tourism. However, challenges remain in enhancing tourists' perception, trust, and intention regarding green tourism, and in encouraging them to adopt green tourism behaviors in practice. Based on the context of green tourism in Hainan Province, this study employs Structural Equation Modeling (SEM) to explore the relationships between tourists' green perceived attitude (GPA), green trust (GTR), perceived behavioral control (PBC), and green purchase intention (GPI), with a particular focus on the mediating role of green purchase intention in the relationship between these factors and green perceived behavior (GPB).

A purposive sampling technique yielded 330 valid responses from tourists visiting Hainan Province. The findings indicate that green perceived attitude and perceived behavioral control significantly enhance green purchase intention, whereas green trust does not. Furthermore, green purchase intention plays a crucial mediating role in the relationship between perceived behavioral control and green purchase behavior. Notably, green perceived attitude indirectly influences green purchase behavior through green purchase intention. In contrast, green trust directly and positively impacts green purchase behavior, as evidenced by the results. The results reveal the importance of green purchase attitude and perceived behavioral control in enhancing green purchase intention and behaviour among tourists visiting Hainan province. To strengthen green tourism in Hainan, policy efforts should prioritize improving tourists' perceived behavioral control and attitudes by increasing the accessibility and appeal of sustainable choices. This can be achieved through subsidies, discounts, and better promotion of eco-friendly accommodations, tours, and transport options. Additionally, green certifications for tourism businesses and public awareness campaigns on the environmental benefits of sustainable tourism will further boost positive attitudes. These measures not only empower eco-conscious decision-making but also position Hainan as a leader in sustainable tourism, aligning with global trends and enhancing its attractiveness to environmentally aware travelers.

Keywords:

Green Perceived Attitude, Green Trust, Perceived Behavioral Control, Green Purchase Intention, Green Perceived Behavior, Hainan's Green Tourism

Composting of Horticultural Residues for Manure and Humic Acid Production

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Abstract:

The possibility of converting the organic fraction of horticultural residue to mature compost using composting bin method was studied. Fruit, vegetable and flower residues were composted individually as well as in mixtures by using defined organic matter decomposition cultures and undefined waste decomposer culture. Among the residues, the fruit residues showed high mineral composition compared to other residues: 1.52 % N, 0.44 % P, 0.91 % K, 0.82 % Ca, 0.42 % Mg, 0.28 % S, 520.0 ppm Fe, 50.50 ppm Zn, 45.00 ppm Mn and 2.50 ppm Cu along with enzymatic activities: amylase (4.50 μmol/mL/min), urease (146.70 μg NH_4-N/g/h), cellulase (49.10 μg glucose/g/h), ligninase (4.55 U/mL), dehydrogenase (25.20 μg TPF/g/h) and acid phosphatase (60.48 μg PNP/g/h). A narrow C: N ratio (33.91) and high alkaline phosphatase activity (19.90 μg PNP/g/h) was noticed in flower waste. Upon composting, there was reduction in the moisture, EC, OC, C: N ratio, starch, cellulose and lignin contents. Fruit residues composted by waste decomposer and microbial consortium had higher mineral status compared to vegetable and flower residues. The pH had increased with decomposition and the highest pH (7.56) recorded was in the compost flower residues fermented by defined microbial consortium. Similarly, the status of mineral contents: N, P, K, Ca, Mg, S, Fe, Zn, Mn, Cu and protein contents were also on higher side in all the composted residues, however, the fruit residues decomposed by microbial consortium had showed highest mineral status. It was also observed that the enzyme activities such as amylase, urease, cellulase, dehydrogenase and acid phosphatase activities had decreased and ligninase and alkaline phosphatase activities had increased at the end of 90 days decomposition. The highest recovery of 10.63 per cent humic acid and 3.36 per cent fulvic acid was recorded in fruit residues composted by microbial consortium. The highest E4/E6 ratio (spectral characteristics), total acidity, carboxyl group and phenolic –OH group (functional groups) of 5.95, 9.82 meq/g, 6.83 meq/g, and 2.99 meq/g respectively, was recorded in fruit residues composted by microbial consortium compared to other composts.

Keywords:

Organic Matter, Humic Acid, Nutrients, Microorganisms, Transformations

Impact of Air Pollution on Human Health in India

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Abstract:

In India one of the era's Air pollution is a major environmental issue that poses serious health risks to human worldwide. According to the air quality monitoring data across worldwide, India is adverse affect by air pollution. Among the 30 most polluted cities listed in 2023 world ranking, 22 are located in India. New Delhi has the most pouted city in India. Thus, more than 660 million Indians breathing problem by polluted air and suffer from various health problems. In India, Air pollution have affect in living urban areas where most of people acts outdoor activities, then many pollutants such as carbon monoxide, sulfur dioxide, volatile organic compounds, dioxin, heavy metals lead etc that the major factor that create a disease in human beings. The present studies show that air pollution has also increase the risk of respiratory infection, chronic obstructive pulmonary disease, heart disease, stroke and lung cancer.

Keywords:

Air Pollution, Health Risks, Environmental Issues

Pollution and Health Effects

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Abstract:

Pollution is a critical global issue with profound implications for human health and the environment. It manifests in various forms, including air, water, soil, and noise pollution, each contributing to significant health challenges. Air pollution, driven by industrial emissions, vehicular exhaust, and particulate matter, is a leading cause of respiratory and cardiovascular diseases. Water pollution, stemming from chemical runoff and untreated waste, leads to waterborne illnesses and toxic exposure. Soil contamination affects food safety and agricultural productivity, while noise pollution is linked to stress, hearing loss, and sleep disturbances. Vulnerable populations, such as children, pregnant women, and the elderly, are disproportionately affected. This abstract emphasizes the urgent need for integrated policies, public awareness, and sustainable practices to mitigate pollution's adverse health effects. Addressing these challenges is essential to safeguarding public health and achieving environmental sustainability.

Keywords:

Pollution, Health Effects, Air Pollution, Water Pollution, Soil Contamination, Noise Pollution, Environmental Health, Sustainable Development

Low-Cost Building Materials for Sustainable Housing and Green Construction

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Abstract:

The escalating global demand for housing, connected with growing environmental concerns, necessitates innovative approaches to sustainable construction. Low-cost building materials offer a practical solution by reducing construction expenses while supporting ecological goals. These materials, often derived from recycled, locally available, or renewable resources, provide an alternative to traditional construction methods that heavily depend on high-energy materials like cement and steel. These materials aim to minimize ecological footprints while ensuring economic feasibility, durability, and accessibility. This abstract explores the integration of sustainable construction practices through locally sourced, recycled, and renewable materials, such as bamboo, compressed earth blocks (CEBs), recycled plastic, agricultural residues like straw, rice husks and industrial by-products like fly ash and slag. These materials not only lower costs but also contribute to reduced construction waste, energy efficiency, and better thermal performance. Bamboo, is a rapidly renewable material with exceptional tensile strength, making it ideal for structural applications. Similarly, CEBs utilize local soil, reducing the energy-intensive processes of traditional brick-making. Fly ash and slag are being increasingly used to replace cement in concrete, reducing carbon emissions associated with traditional cement production. Such materials reduce environmental impacts through lower embodied energy, minimized carbon footprints, and reduced waste generation. Low-cost sustainable materials in building construction, contributing to affordable and eco-friendly housing solutions for a rapidly urbanizing and housing crises in developing countries. Their integration into green construction practices aligns with global goals for sustainability, energy efficiency, and the mitigation of climate change.

Keywords:

Sustainable Housing, Eco Friendly, Building Materials

Identification of Small Sized Jackfruit Genotypes Suitable for Small Families

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Abstract:

The present investigation was undertaken to develop a variety in jackfruit. Hence the research was conducted on the bearing trees of different jackfruit genotypes at Pudukkottai District of Tamil Nadu, India during the year 2016-2019. Fifty five jackfruit genotypes viz., KDM-AhJ-01 to KDM-AhJ-55 were selected for the study to identify superior ones. Highest number of fruits per plant (43.33.00) was obtained from KDM-AhJ-8 followed by KDM-AhJ-31 (33.33). Maximum individual fruit weight was gained from 4 KDM-AhJ-46 (16.33 kg) and minimum of (4.67 kg) was observe by the genotype KDM-AhJ-08 was suitable for small families. Yield varied from 62.67 kg/tree to 458.33. Highest number of flakes per fruit was obtained from KDM-AhJ-10 (210.00). Highest Flakes: Seed ratio was obtained from 10 (5.30). Upper limit TSS content recorded to KDM-AhJ-08 (29.17° brix). Highest total sugar (25.20%), highest protein, lowest acidity (0.10%), lowest ascorbic acid content was found to KDM-AhJ–8. Maximum overall acceptability 9.75 was observed by the genotype KDM-AhJ -8. Shelf life of flakes varied distinctly among the fifty five jackfruit germplasms. The genotypes KDM-AhJ -08 and KDM-AhJ -10 record for five days. Among the 55 genotypes, diversity was recorded for each and every genotype. Based on overall performance with respect to vegetative growth, yield and quality characters were recorded to identify the superior genotypes.

Keywords:

Jackfruit (J), KDM (Kudumiyanmali), *Artocarpus heterophyllus* (Ah) Collection, Evaluation, Germplasm, Genotypes, % (per cent)

Correlation Between Physicochemical Characteristics and Heavy Metal Concentration in Municipalities Surrounding a Volcano

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Abstract:

Heavy metals are some of the components in a volcanic ash which may have deposited in the land during a volcanic eruption. The study aimed to determine the correlation between the physicochemical characteristics and heavy metal concentration of soil after a volcanic eruption. The agricultural soil samples from Cuenca and Talisay, Batangas and Tagaytay City, Cavite were submitted to a laboratory for arsenic, cadmium and mercury detection and quantification. The soil pH, temperature, organic matter and phosphate were the physicochemical characteristics identified. The results were compared to the standard values of the Department of Environmental and Natural Resources for arsenic and United States Environmental Protection Agency for cadmium and mercury. Pearson correlation was used to determine the correlation between the physicochemical characteristics and heavy metal concentration in the soil. The study showed that the soil in Talisay, Batangas and Tagaytay, Cavite are contaminated with arsenic. In addition, there is moderate to strong correlation of arsenic to soil pH and organic matter but a moderate negative correlation to soil pH and temperature. The two-fold increase of arsenic has various effect to the physicochemical characteristics of the soil.

Keywords:

Soil Pollution, Physicochemical Characteristics, Volcano

A Comprehensive Research Survey on the Application of Deep Learning Techniques in Lung Diseases

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Abstract:

This survey paper provides a comprehensive overview of lung diseases, focusing on prevalent conditions such as pneumonia, tuberculosis, lung cancer, and COVID-19. Early and accurate detection of these diseases is critical for effective treatment and management; however, challenges persist due to the subtlety of early-stage symptoms and variations in disease presentation. We explore the role of deep learning techniques, particularly Convolutional Neural Networks (CNNs), in analyzing medical imaging data, including chest X-rays, CT scans and MRI scan. CNNs excel in automatically learning features from images, significantly improving disease detection accuracy. We also examine transfer learning, which leverages pre-trained models to enhance performance in scenarios with limited annotated data, and ensemble methods that combine multiple models to bolster robustness and precision. The paper highlights applications of deep learning in detecting pneumonia, tuberculosis, lung cancer, and COVID-19, demonstrating the superiority of these techniques over traditional methods. Furthermore, we discuss future directions, including the integration of multi-modal data, the need for explainable AI to enhance model interpretability, and the potential for real-time applications in clinical settings. Overall, this survey underscores the transformative potential of deep learning in revolutionizing the detection and management of lung diseases, paving the way for improved patient outcomes and healthcare efficiency.

Keywords:

Pneumonia, Tuberculosis, Lung Cancer, COVID-19, Convolutional Neural Networks (CNNs), Disease Detection

Green Waste of Corn Husk: A Pathway to Sustainable Textiles

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Abstract:

The textile industry is transitioning toward sustainability, emphasizing resource efficiency and waste utilization. Corn husk, an agricultural byproduct, presents a promising opportunity to create sustainable textiles. This study focuses on a comprehensive pathway, starting with a survey of corn growers to understand the availability of corn husk waste and current disposal practices. Each year, tons of corn husk are discarded or burned, contributing to environmental pollution and waste management issues. Utilizing this bio-waste for textile production not only reduces environmental hazards but also adds value to an otherwise neglected by-product. Corn husk fibers are inherently biodegradable, renewable, and eco-friendly, aligning perfectly with the principles of sustainable and circular economies. Their extraction and processing require lower energy inputs compared to synthetic fibers, thereby reducing carbon footprints.

Fiber extraction was carried out using three different methods viz; water retting, chemical retting, and enzymatic retting techniques, ensuring a comparison of their efficacy. The extracted fibers were evaluated on the basis of physical and chemical properties viz; Tensile Strength, Absorbency, Cellulose and lignin content etc., establishing their potential for blending with cotton to create yarn. The blended yarns were subjected to standard performance and quality testing to ensure viability. Furthermore, the study extended to designing and producing home furnishing articles, showcasing practical applications of corn husk-based textiles. Cost analysis and market accessibility of these products were conducted to evaluate their commercial viability.

The study found enzymatic retting to be the most sustainable and effective method for extracting high-quality corn husk fibers, offering superior strength, flexibility, and cellulose content while minimizing environmental impact. In contrast, water retting produced lower-quality fibers, and chemical retting, though yielding purer fibers, raised environmental concerns. Enzymatic retting positions corn husk as a viable resource for sustainable, high-end textiles. The corn husk fibers blended with cotton (50:50) as a sustainable option for home furnishings articles. Testing showed good strength, durability, and moisture absorption, enhanced by enzymatic treatments and natural dyes. Cost-effective production yielded competitively priced items (100/-Rs. – 300/-Rs.), appealing to eco-conscious consumers. Despite challenges like limited awareness and perceived fragility, corn husk textiles show strong potential in sustainable and premium markets.

This initiative supports the principles of the circular economy, addressing waste management, reducing dependency on synthetic materials, and promoting sustainable practices. The process creates additional income generation opportunities for farmers and rural women, integrating social and environmental benefits into a cohesive framework for green technology. The findings demonstrate the viability of corn husk fibers as an eco-friendly alternative for the textile industry, bridging innovation with sustainability and economic empowerment.

Innovative Technologies to Recycling Waste

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Abstract:

If waste is Gold if it is properly held". In India is second fastest growing economy and second populated country in the world. The most population lives in urban areas and has rise the rate of migration has rise rural areas to urban areas. The expected migration has rise 44 % in 2026. The percentage waste materials have increase with the increase the population. Issue is not a pubic knowledge to compose the waste materials but considered to better compose. Effective waste management is essential for maintaining environmental sustainability, public health, and resource conservation in an increasingly urbanized and industrialized world. This paper explores the methods, challenges, and innovations in waste management, emphasizing integrated approaches that combine waste reduction, recycling, and proper disposal. It discusses the environmental impacts of improper waste handling, including pollution, greenhouse gas emissions, and harm to ecosystems. The study also highlights the role of advanced technologies, such as waste-to-energy systems, smart waste bins, and circular economy models, in enhancing efficiency and minimizing waste generation. Furthermore, the importance of public awareness, policy enforcement, and collaboration between governments, industries, and communities in addressing global waste management issues is examined. By adopting sustainable practices and innovative solutions, societies can achieve significant progress toward reducing waste and promoting a cleaner, greener planet and go green before green goes.

Keywords:

Waste Products, Environment, Recycling, Waste-To-Energy Systems

Environmental Pollution and Its Effects on Human Health

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Abstract:

Environmental pollution is a global problem that has a big impact on people's health and well-being everywhere. The widespread existence of environmental contamination worldwide is a result of the increasing use of fossil fuels, inappropriate sewage disposal methods and careless use of agricultural pesticides. The detrimental effects of pollution are evident in higher rates of cancer, cardiovascular disease, respiratory conditions, mental disorders, and diarrhea. Numerous environmental contaminants significantly contribute to human disease, affecting climate change and public individual health, leading to increased mortality and morbidity. Approximately 7 million people die each year from causes related to air pollution, while another 1.6 million die from illnesses brought on by water pollution. The genesis of cancer and the impact of various environmental pollutant on the human body's cardiovascular ,respiratory, reproductive ,prenatal and neural health in this overview.

Keywords:

Environmental Pollution, Agricultural Pesticides, Environmental Contaminants, Human Health

Toxicological Evaluation of Chemical Exposure and Its Health Impact on Industrial Labour During the COVID-19 Pandemic

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Abstract:

The COVID-19 pandemic triggered unprecedented changes in industrial cleaning protocols, leading to widespread use of chemical disinfectants that introduced significant toxicological risks for industrial workers. (1) Workers faced acute health impacts, including respiratory irritation, dermatological reactions, and exacerbated asthma symptoms due to improper ventilation and prolonged chemical exposure. (2) Particularly vulnerable were laborers in enclosed spaces with inadequate personal protective equipment (PPE), experiencing toxic exposure through multiple pathways such as inhalation, dermal absorption, and accidental ingestion. The chemical overuse during the pandemic revealed critical occupational health challenges. (1) Cleaning staff and industrial workers were disproportionately affected, with heightened risks in poorly ventilated areas. (2) Acute effects included irritation of eyes, skin, and respiratory tract, while chronic exposure raised significant concerns about endocrine disruption and potential reproductive toxicity. (3) Key chemical agents involved quaternary ammonium compounds (QACs), chlorine-based agents, and alcohol-based sanitizers.

To mitigate these risks, several strategies were identified and recommended. (1) Alternative cleaning methods like ultraviolet (UV) light and steam cleaning were proposed to reduce chemical dependency. (2) Enhanced PPE usage, including specialized gloves and respiratory protection, was deemed vital. (3) Regulatory bodies such as OSHA and WHO advocated for rational use protocols and provided detailed safety guidelines. The long-term implications of increased chemical exposure demand urgent attention. (1) Recommendations include transitioning to safer, non-toxic disinfectants like hydrogen peroxide vapor. (2) Proposed mitigation strategies encompass improved engineering controls, stricter regulatory guidelines, and comprehensive worker training. (3) The pandemic exposed critical gaps in existing occupational safety frameworks, emphasizing the need for integrated toxicological assessments in emergency response planning.

Ultimately, the study underscores the dual challenge of maintaining infection control while protecting worker health. Collaborative efforts among industries, regulatory bodies, and researchers are crucial in developing sustainable disinfection strategies. A proactive, worker-centric approach is essential to address unprecedented chemical exposure risks in industrial settings.

Toxicological evaluation of chemical exposure assesses how pollutants from industries harm ecosystems by identifying toxic substances, their persistence, and bioaccumulation effects. It reveals the impact of chemicals on air, water, and soil quality, disrupting biodiversity and natural cycles.

Keywords:

Chemical Exposure, Toxicological Evaluation, Industrial Labour, COVID-19 Pandemic, Quaternary Ammonium Compounds (QACs)

Solar Energy and Climate Change: Innovations and Opportunities for a Sustainable Future

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Abstract:

Renewable energy especially solar energy has proved as an important tool in countering climate change as it replaces fossil energy and reduces emission of greenhouse gases. Recent development in Photovoltaic material has improves efficiency of the photovoltaic cell like perovskite cells and bifacial panels, which has improved the efficiency and reduced the cost of the solar power across the world. Also, the developments made in solar thermal systems in addition to energy storage technologies such as lithium-ion batteries and hydrogen cells have enhanced the significance of solar energy in combating environmental problems. In spite of these advancements, challenges that are associated with the social use of solar energy include socio-economic differences, space constraint and also lack of adequate policies. It is evident from this paper that these challenges need to be addressed through international collaboration, new technologies, and favorable polices so as to unleash the opportunities in the efficient use of solar energy to support the world's sustainable future.

Keywords:

Solar Energy, Climate Change, Photovoltaic Technology, Energy Storage, Renewable Energy, Sustainability, Innovation, Policy Challenges

Assessment of Fluoride Contamination in Soils, Ground Water and Its Phytotoxic Effect on the Growth and Yield of Tomato in Eastern Dry Zone of Karnataka

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Abstract:

Fluoride (F) is a toxic substance present in air, water and soil. Increased levels of fluoride in soil, ground water and in food crops will have adverse effects on plants and human beings. In view of this, present study was undertaken to investigate concentrations of fluoride contents in soils, ground water and its phototoxic effect on growth and yield parameters of tomato. The outcome of the findings of Kolar District that falls under eastern dry zone of Karnataka showed that the fluoride concentration of underground bore well water had ranged from 1.10 to 2.29 mg/L, which is in the permissible limits of fluoride content in irrigation water i.e. below 10 mg/L, hence, the water collected in the region is safer for the cultivation of crops. Similarly, the fluoride concentration of the tested soil samples also found to be in the permissible limits (2.57 to 16.44 mg/kg) which showed a range of 1.39-2.10 mg/kg. On the other hand, the fluoride concentration of the tomato fruits, grown by the farmers had ranged from 0.16 to 3.41 mg/kg, which is also in the permissible limits (5-30 mg/kg). Further, a pot culture experiment was conducted under greenhouse conditions on tomato crop to know the effects of different concentrations of fluoride 0, 2.5, 5.0, 10, 15 and 20 mg/kg as sodium fluoride. It was observed that the growth and yield attributes like germination percentage, plant height, number of leaves, number of flowers per plant, fruit-set and yield per plant was inhibited as the levels of sodium fluoride increased from 15 to 20 mg/kg.

Keywords:

Fluoride, Soil, Water, Tomato, Growth, Yield

Influence of Growth Regulators and Elicitors on Growth, Yield and Quality of Rosemary (*Rosmarinus officinalis*) under Eastern Dry Zone of Karnataka

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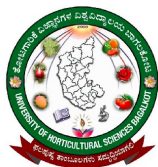
Abstract:

Present investigation entitled "Influence of growth regulators and elicitors on growth, yield and quality of Rosemary (*Rosmarinus officinalis*) under Eastern dry zone of Karnataka" was carried out at College of Horticulture, UHS Campus, GKVK, Bengaluru, during 2022-23. The experiment was laid out in RCBD with thirteen growth regulators and elicitors replicated twice. Foliar application of 300 ppm gibberellic acid at 60, 90, 120, 150, 180 DAT and 30, 60 DAFH recorded highest plant height of 38.24, 41.34, 48.74, 57.20, 64.19 and 39.66, 45.00 cm both during main and ratoon crop respectively. Potassium silicate at 200 ppm recorded maximum stem diameter during main crop 0.92, 1.25, 1.30, 1.60, 1.67 and 2.00 at different growth stages and ratoon 2.28 and 2.78 cm at 30 and 60 DAFH, respectively. Chlormequat at 4000 ppm significantly increased number of branches both in main and ratoon crop at all growth stages. Additionally, same treatment resulted in highest leaf area 4.31 and 4.36 cm2 at 90 and 180 DAT. The highest number (29.20) of branch length exceeding 20 cm were recorded with application of NAA at 200 ppm. Delayed flower initiation and 50 per cent flowering was seen in plants sprayed with brassinosteroid at 3 ppm. Paclobutrazol at 200 ppm significantly increased essential oil content (1.2 and 1.3 %) both in main and ratoon crop and 1,8–cineol (18.99 %) content. Chlormequat at 3000 ppm positively influenced the fresh and dry mass of leaves, stem and roots, as well as fresh and dry herbage yield. Whereas, chlormequat at 4000 ppm increased oil yield. Considering the essential oil yield chlormequat at 4000 ppm recorded highest net returns (Rs. 20,95,068 ha^{-1}) and B:C ration (4.58). Meanwhile, for dry herbage yield the maximum net returns (Rs. 12,76,113 ha^{-1}) and B:C ratio (3.77) was reported with chlormequat at 3000 ppm.

Keywords:

Elicitors, Essential Oil, Plant Growth Regulators And Rosemary

Green Economic Growth through Nature-Centric Solutions: Paving the Way for a Sustainable Agricultural Future in India

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Abstract:

Green economic growth presents an opportunity to balance economic development with environmental sustainability. In India, sustainable agriculture offers a vital pathway to achieving this vision, particularly in regions like Karnataka, where diverse agro-climatic zones and rain-dependent farming increase vulnerability to climate variability. This article explores how nature-centric solutions, embedded in policies encouraging grassroots-level actions, can drive sustainable agriculture and become the foundation of a green economy. Through regenerative practices, agroecology, agroforestry, and technological innovations, Karnataka can serve as a model for inclusive and resilient agricultural systems that foster environmental and economic health. This article also highlights policy recommendations for empowering local communities and leveraging advanced technology, positioning India as a leader in sustainable agriculture.

Keywords:

Green Economic Growth, Nature-Centric Solutions, Sustainable Agricultural, Future Agricluture in India

Plant Growth Promoting Microorganisms (PGPM) to Improve Phytochemicals in *Phyllanthus niruri*

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Abstract:

The *Phyllanthus niruri* is an excellent medicinal herb generally cultivated using inorganic chemicals. The application of plant growth promoting microorganisms (PGPM) in medicinal crop production offers an ecofriendly strategy to enhance the quality of the principal therapeutically important medicinal components without compromising on the yield. The current study on Plant Growth Promoting Microorganisms (PGPM) to improve phytochemicals in *Phyllanthus niruri* was conducted at the Department of Plantation, Spices, Medicinal and Aromatic Crops, College of Horticulture, Bengaluru during 2023-24. Two efficient formulations of microbial consortia, PGPM-1 (*Azospirillum lipoferm, Pseudomonas striata, Frateuria aurantia* and *Pseudomonas fluorescens*) and PGPM-2 (*Azotobacter chroococcum, Glomus fasciculatum, Bacillus sp.* and *Trichoderma harzianum*) were evaluated at 4 different levels of chemical fertilizers @ 0, 50, 75 and 100% RDF. The study findings revealed that the maximum concentration of phyllanthin (0.406%) and hypophyllanthin (0.109%) were observed in presence of the consortium PGPM-1 at 50 per cent RDF. While, PGPM-1 with 100% RDF had shown maximum phyllanthin (17.45 kg ha-1), hypophyllanthin yield (4.43 kg ha-1). However, the contents of phenols (114.50 mg GAE/100g), flavonoids (28.73 mg QE/100g), tannins (54.52 mg TAE/100g) and saponins (172.47 mg SE/100g) were found to be comparatively more in PGPM-2 than in PGPM-1 at 75% RDF except alkaloids content (111.30 mg AE/100g) was higher in PGPM-1 with 75% RDF. From this study, it was proven that application of consortia *Azospirillum lipoferum, Pseudomonas striata, Frateuria aurantia* and *Pseudomonas fluorescens* having nitrogen fixation, phosphate solubilisation, potassium mobilisation and biocontrol abilities has increased the quality components of Phyllanthus, particularly for the commercial production of phytochemicals.

Keywords:

Phyllanthus niruri, PGPM, quality, phyllanthin, hypophyllanthin

Integrated Nutrient Management in Bhringaraj

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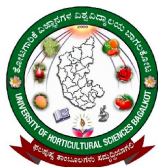
Abstract:

Bhringaraj (*Eclipta alba L.*) is an important medicinal herb used in traditional system of medicine for various health benefits. Optimizing its growth and quality through appropriate nutrient management is crucial for maximizing its therapeutic potential. The current study was conducted at the Department of Plantation, Spices, Medicinal and Aromatic Crops, College of Horticulture, Bengaluru during 2023-24 to examine the effect of organic and inorganic sources of nutrients on growth, yield and quality of bhringaraj. The field trial was laid out in randomised complete block design comprising 11 treatments including recommended dose of nitrogen at 3 different levels viz., 50 and 75 per cent combined with various organic manures (poultry manure, neem cake, vermicompost and jeevamrutha) and 100 per cent RDF (100:75:50 kg ha^{-1}) as control and are replicated thrice. Findings revealed that application of 50 per cent N through inorganics +50 per cent N through neem cake resulted in increased plant height (36.03 cm), number of branches (8.07), chlorophyll content (60.18 SPAD value) and leaf area ratio (0.42 m2 g^{-1}) at the time of harvest whereas, leaf area index (0.006) and crop growth rate (0.87 g m^{-2} day^{-1}) was found to be highest in 50 per cent N through inorganics +25 per cent N through vermicompost +25per cent N through neem cake. Plants supplied with RDF+jeevamrutha (5%) has shown early flower initiation (34.67 days) and days to 50 per cent flowering (55 days). The treatment supplied with 50 per cent N through inorganics +50 per cent N through neem cake has shown significantly highest fresh herbage yield (7.44 t ha^{-1}), dry herbage yield (1.24 t ha^{-1}) and seed yield (290.12 kg ha^{-1}). However, the maximum concentration of wedelolactone (0.111%) was observed in 50 per cent N through inorganics +25 per cent N through vermicompost +25 per cent N through poultry manure. From the current study, it can be concluded that the application of 50 per cent nitrogen through inorganic sources along with 50 per cent nitrogen through neem cake produced the best outcomes in terms of bhringaraj growth, yield and overall quality.

Keywords:

Bhringaraj, Organic and Inorganic Nutrients, Growth, Yield, Quality

Management Review on the Effectiveness of the Protected Area Management in Tinuy-an Falls Protected Landscape (TFPL), Caraga Region, Philippines

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Abstract:

This study will facilitate the Management Review of the Effectiveness of the Protected Area Management in TFPL utilizing the Management Effectiveness Tracking Tool (METT) prescribed in the DENR-BMB Technical Bulletin No. 2018-05. Fifteen (15) TFPL Protected Area Management Board (PAMB) members, constituting 71%, voluntarily completed the survey and signed consent forms in compliance with the Philippine Data Privacy Act of 2012 (RA 10173) during the PAMB Meeting on March 13, 2024. The management review of TFPL, reveals an overall average score of 1.90 for perceived threats and stressors, indicating a moderate influence on TFPL as a designated protected area in the Caraga Region. Management interventions include context, planning, process, inputs, output, and outcome. The context element establishes the legal foundation, with informing stakeholders about TFPL boundaries being crucial. The planning element integrates regulations and objectives into TFPL's manuals, with budget allocation and support leveraging for IPAF establishment. The process element ensures stakeholders' involvement, particularly indigenous peoples, in sustaining economic benefits, overseeing the protected area's carrying capacity, and safeguarding ecosystems while preserving culture. These efforts are crucial for achieving the sustainable management goals of TFPL, ensuring biodiversity conservation and cultural value preservation. Finally, periodic METT assessments will be carried out to guide action planning to reach the highest attainable METT score for TFPL as a designated protected area.

Keywords:

Protected Area, Management Effectiveness, Evaluation, Assessment

The Antecedents of Job Burnout Among Chinese Working adults: Exploring the Mediating Effect of Self-Efficacy and the Role of Green HRM Practices in Mitigating Job Burnout

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Abstract:

Job burnout remains a critical concern within both academic and practical spheres due to its extensive and detrimental impact on individuals, organizations, and society. Many organizations are adopting strategies to mitigate the adverse effects of job burnout, with a focus on environmental safety, sustainable development, and promoting employee health and well-being, yet these approaches may overlook deeper organizational and systemic causes. This study aims to examine the impact of fear of missing out, psychological capital, work-family conflict, and job stress on job burnout among Chinese working professionals, with a specific focus on the mediating role of self-efficacy in the relationship between job stress and burnout. Moreover, the study explores the effectiveness of Green Human Resource Management (GHRM) practices in alleviating burnout, questioning their potential as a sustainable solution. Data were collected from 361 Chinese employees using a survey-based questionnaire, offering a robust foundation for analysing these complex dynamics. The data analysis was conducted using PLS-SEM. The findings indicate that fear of missing out, work-family conflict, and job stress have positive relationships with job burnout, while self-efficacy has a negative effect. No significant direct relationships were found between psychological capital and job burnout, as well as between job stress and self-efficacy. Additionally, self-efficacy did not mediate the relationship between job stress and job burnout. This study provides valuable insights for policymakers, practitioners, and academics by highlighting the importance of Green Human Resource Management (GHRM) in integrating social and environmental responsibility into HR practices, thereby promoting a more sustainable workplace that can help reduce job burnout.

Keywords:

Job Burnout, Fear of Missing Out, Psychological Capital, Work-Family Conflict, Job Stress, Self-Efficacy, JD-Theory, COR Theory

The Role of Designers for an Environmentally Friendly Future

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Abstract:

In the face of increasing environmental problems, designers play an important role in driving sustainable change. The author is a lecturer in Visual Communication Design who is also an association member as Deputy for Social Environment at the AIDIA Design Association in Jakarta. Then in his daily phenomena the author realizes that the field of design, especially in the academic world, can be a strong catalyst for a friendly future environment. Exploring the role of design as value creation, this research examines how sustainable design practices can be integrated into education, nurturing a generation of designers to think about the impact of design on society and the environment in the design process.

Designers have the unique ability to influence the lifecycle of products and services, from resource-backed materials to sustainable production processes and user-centric experiences. As part of an effort to embed sustainability value creation into the academic foundation, this research investigates how design thinking can be structured to encourage environmental responsibility from the start. The aim is to shape future designers who are committed to creating value for society and the environment.

This research refers to a case study from an experiment that focuses on value creation design practices and how the designs created will have a good impact and have sustainable value, and the experiment shows the impact of changes in training participants thinking on awareness and concern for socially and environmentally thoughtful design.

This emphasizes the role of academic institutions as incubators of sustainable design values that will be instilled and transmitted into professional life. By developing curricula that are aligned with global environmental goals, especially the Sustainable Development Goals (SDGs), the academic world can become a starting point for designers to understand and realize sustainability.

Ultimately, this research highlights the importance of integrating value-creation design thinking in academic settings, where designers first begin to shape their work. Through educational foundation, design can become a significant agent of change, encouraging ecological responsibility and value creation that goes beyond aesthetics, and leaves a long-lasting impact on future practices and the environment.

Keywords:

Sustainable Design, Value Creation, Environmental Impact, Visual Communication Design, Academic Design Education, AIDIA Design Association, ecological responsibility, Sustainable Development Goals (SDGs), Design Thinking, Environmental Awareness, Design Lifecycle, Academic Influence, Curriculum Development, Socially Responsible Design, Environmental Friendly Design

Sustainable Environments against Technology Transformations According to Jared Diamond Point of View

Abdul Latif, M. Si
Junior Reader

Abstract:

There have been two questions of human existing. The first question is the beginning of them and the second one is the end of them. The comparison of two questions will be followed by the two questions again, there will be the beginning of the environment and the end of the one. The formula of first is:

A [1ST= 0, 2ND= 0'] A' [1ST= 1, 2nd= 0] and A [1st= 0, b=0+0] B' [a+a= 1, b+b= 0'].

The mark of 1st is A, the beginning and 2nd is B, the ending. Mark of (') have a meaning as the different but continuum or plus (+). A [a= 0, b= 0'] 2A [2a= 1, 2b= 1]. The B changes to 2A.

The research questions: What are the influenced of beginning of the human by? What are the influenced of the end of the human by? And the next questions are What are the influenced of beginning of the environments by? What are the influenced of the end of the environments by? There is above formula that within two factors for questions and the two factors are beginning and ends then two factors contrasted by human (they are the factors that has favours values). Does the beginning influence to the ending of environments? It can be (+) for? It can be (X) for? And it can be (:) for?

A [a=0, b=0'] + 2A [2a=1, 2b=1].

A [a=0, b=0'] x 2A [2a=1, 2b=1].

A [a=0, b=0'] / 2A [2a=1, 2b=1]. According to the title of the research, it concludes into three variables: Variable 1. A [a= 0, b= 0'] + 2A [2a=1, 2b=1].

A [a=0, b=0'] + 2A [2a=1, 2b=1] + 2A [2a=2, b=2] + 2A [2a=2, 2b=2].

A [a=0, b=0] + 2A [2a=1, 2b=1] + 2A [2a=2, b=2] + 2A [2a=1, 2b=2].

A [a=0, b=0'] + 2A [2a=1, 2b=1] + 4A [2a=4, 2b=2] + 4A [2a= 4, 2b= 2].

A [a=0, b=infinity] + 2A [2a=1, 2b=infinity] + 4A [2a=4, 2b=2] + 4A [2a=4, 2b=2].

A [a=0, b=infinity] + B [2a=1, 2b=infinity] + 2BA [2a=4, b=2] + 4A [2a= 2, 2b=2].

A [a=0, b=Infinity] + B {[2a=1, 2b=infinity] + 2B [2a=4, 2b=2] + B [2a=1, 2b=infinity] + 2B [2a=4, 2b=2] + 4a [2a=4, 2b=2]}.

Variable 2. A [a=0, b=0'] x 2A [2a=1, 2b=1]. A [a=0, b=infinity] + 2A [2a= 1, 2b=infinity].

Variable 3. A [a=0, b=0] / 2A [2a=1, 2b=1]. A [a=o, b=0] / 2A [2a=1, 2b=1]. A [a=o, b=infinity] / 2A [2a=1, 2b=1 x infinity].

Keywords:

Jared Diamond, Sustainable Environments, Technology Transformation

The Antecedents of Eco-friendly Purchase Intention Among Chinese University Students: The Mediating Role of Environmental Concern and Green Attitude

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Abstract:

Purpose: Public concern for environmental sustainability has grown significantly, particularly among younger generations in developing nations. To effectively address these concerns, it is imperative to identify the factors that influence eco-friendly purchasing behavior. This study aims to investigate the antecedents that promote eco-friendly purchase intentions among Chinese university students. Specifically, it will examine the mediating roles of environmental concern and green attitude on these intentions.

Design/Methodology/Approach: Drawing upon the Theory of Planned Behavior (TPB), this study employed a cross-sectional design. Data was collected from 385 respondents through an online survey, utilizing purposive sampling The collected data were analyzed using partial least squares structural equation modeling (PLS-SEM) with SmartPLS 4.0 software.

Findings: The results reveal that green attitude significantly mediates the relationships between environmental concern and eco-friendly purchase intention and also between environmental perceived value and eco-friendly purchase intention among university students in China, but it is not a significant mediator in explaining the relationship between environmental knowledge and eco-friendly purchase intention. Furthermore, the study also found environmental knowledge and green attitude to be significant predictors of eco-friendly purchase intention.

Implications: Theoretically, this study extended TPB with added predictors on green purchase attitudes and intentions in the context of Chinese university students. Practically, this study sheds light on practical guidance for improving environmentally conscious buying behavior for the university, society, marketing, and government policymakers.

Keywords:

Environmental Knowledge, Environmental Concern, Environmental Perceived Value, Green Attitude, Eco-friendly Purchase Intention

Sustainable Green Synthesis of Silver Nanoparticles using *Coffea arabica* Husk as Potential Anti-Microbial and Anti-Cancer Agents

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Abstract:

Silver nanoparticles (AgNPs) have emerged as a focal point of research due to their diverse applications in medicine, electronics, and environmental sustainability. This study introduces an eco-friendly and sustainable method for synthesizing AgNPs using *Coffea arabica* husk extract as a natural reducing and stabilizing agent. Additionally, the antimicrobial and anticancer properties of the synthesized nanoparticles were thoroughly evaluated. Bioactive compounds in the coffee husk extract were identified using liquid chromatography-mass spectrometry (LC-MS/MS). Comprehensive characterization of the AgNPs was performed using UV-Vis spectrophotometry, scanning electron microscopy (SEM), and particle size analysis, confirming the formation of spherical nanoparticles with an average size of 147 nm. Zeta potential measurements demonstrated significant nanoparticle stability, while Fourier transform infrared spectroscopy (FTIR) identified functional groups responsible for stabilization. X-ray diffraction (XRD) confirmed the crystalline structure of the AgNPs with a face-centered cubic arrangement. Antimicrobial assays revealed potent activity against *Escherichia coli, Staphylococcus aureus, Pseudomonas aeruginosa*, and *Bacillus subtilis*. Cytotoxicity analysis on MCF-7 breast cancer cells showed selective toxicity, with minimal impact on normal L6 skeletal muscle cells. These results highlight the potential of *C. arabica* husk-derived AgNPs as sustainable agents for antimicrobial and anticancer applications, demonstrating a promising strategy for repurposing agro-industrial waste into value-added nanomaterials for biomedical and environmental advancements.

Keywords:

Silver nanoparticles (AgNPs), Antimicrobial, *Coffea arabica* husk, Cytotoxicity, LC-MS/MS

A Study on Energy Use Pattern and Performance of Biogas Plants in Karnataka

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Abstract:

The study was carried out in Bangalore Rural district of Karnataka and data were collected by using personal interview scheduled to assess impact of biogas technology on rural households. The study revealed that majority of the respondents using biogas for cooking. Most of the owners opined that biogas helps in eliminating environmental pollution, reduces deforestation, reduction in hazarads. Among the respondents, 92.70% of the users use cattle dung for feeding biogas plant. With the use of biogas plants, the user can save 53.50% of energy which is getting by burning 2693 kg of fuelwood per year and average 40.20 kg of LPG fuel per year. By the study, it is also revealed that 69.37% of the respondent replaced chemical fertilizer with biogas slurry for conserving, increasing soil nutrient and yield, perception of the respondents towards the use of biogas plant was revealed that 98% of the respondents was satisfied in one or the other ways.

Keywords:

Biogas, Energy, Respondents and Fuel

The Antecedents of Eco-friendly Purchase Intention Among Chinese University Students: The Mediating Role of Environmental Concern and Green Attitude

Wu Guohong
Xxxxx

Ratneswary Rasiah
Xxxxx

Abstract:

Purpose: Public concern for environmental sustainability has grown significantly, particularly among younger generations in developing nations. To effectively address these concerns, it is imperative to identify the factors that influence eco-friendly purchasing behavior. This study aims to investigate the antecedents that promote eco-friendly purchase intentions among Chinese university students. Specifically, it will examine the mediating roles of environmental concern and green attitude on these intentions.

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Keywords:

Environmental Knowledge, Environmental Concern, Environmental Perceived Value, Green Attitude, Eco-friendly Purchase Intention

Exploration of Deleterious Mutations in Murrah Buffaloes Analyzing Genome Sequence Data

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Abstract:

The Murrah buffalo, often referred to as the "black gold of India," is widely recognized as one of the world's premier milk-producing buffalo breeds. It has played a pivotal role in numerous breed improvement programs both in India and internationally. However, the extensive use of this breed has raised concerns about the potential accumulation of harmful mutations, necessitating a closer examination of its genetic diversity and the occurrence of deleterious DNA mutations. This study aimed to identify genome-wide deleterious non-synonymous single nucleotide polymorphisms (nsSNPs) in Murrah buffalo (Bubalus bubalis) using an *in silico* approach. The ddRAD sequencing data from 96 Murrah buffalo were aligned to the buffalo reference genome (UOA_WB_1), resulting in the identification of 814,919 SNPs at a read depth of 10. Following annotation with the SnpEff tool, 4,742 nsSNPs were identified. These nsSNPs were further analyzed for their functional consequences using a combination of the Variant Effect Predictor, PANTHER, and Consensus Classifier PredictSNP tools. From this analysis, 47 nsSNPs mapped to 41 genes were commonly predicted to be deleterious. Functional annotation of the genes harboring deleterious mutations revealed a predominant association with catalytic activity. Notably, six genes—OR10AG83, FAM135B, SQLE, RB1CC1, SDR16C5, and ARFGEF10—on chromosome 14 exhibited a high concentration of deleterious mutations. These identified mutations present a valuable lead for further analysis of their functional impact through additional studies and experiments. The study offers valuable insights into the genetic health of important breeds like the Murrah buffalo and help inform breeding programs aimed at mitigating the accumulation of harmful genetic variations.

Keywords:

Bubalus bubalis, in silico, ddRAD, Non-synonymous SNPs, Murrah

Sustainable Consumption Intention Among Generation Z College Students: The Mediating Role of Attitudes and the Moderating Role of Price Sensitivity

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Abstract:

Purpose: Public concern for environmental sustainability has grown significantly, particularly among younger generations in developing nations. To effectively address these concerns, it is imperative to identify the factors that influence eco-friendly purchasing behavior. This study aims to investigate the antecedents that promote eco-friendly purchase intentions among Chinese university students. Specifically, it will examine the mediating roles of environmental concern and green attitude on these intentions.

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Implications: Theoretically, this study extended TPB with added predictors on green purchase attitudes and intentions in the context of Chinese university students. Practically, this study sheds light on practical guidance for improving environmentally conscious buying behavior for the university, society, marketing, and government policymakers.

Keywords:

LOHAS Consumption Tendency, Environmental Concern, Social Media Use, Sustainable Consumption Intention

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IFERP Life Sciences

Effects of Different Starch Sources on Physico-Chemical Characteristics of Extruded Feed Pellets

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Abstract:

The aim of the experiment was to investigate the effect of different starch sources ingredient on the extruded feed pellets of experimental in the diets. Seven diets were formulated to contain 25% crude protein and 4 % crude lipid taking soyabean meal, fish meal, DDGS, GNOC, vitamin and mineral mix and vegetable oil as constant and only changing the starch source. The different starch sources such as corn flour, wheat flour, rice flour, and combination of these starch (corn and rice flour, corn and wheat flour, wheat and rice flour and corn, wheat and rice flour) were used and the feed are named CF, WF,RF,CRF,CWF,WRF, and CWRF, respectively. The effect of starch source (Corn, Wheat, Rice) was used to analyze physical quality of extruded feed. Where studied the effects of starch gelatinization in extruder on the physical & chemical quality (the pellet shape, size, water absorption quality, density, softness or stability, floatability) of the extruded diet. Overall, a high gelatinization rate (50%-80%) was observed in all feeds. Higher rate of gelatinization was recorded in CWF 82.20%, while lowest rate of gelatinization was recorded in CF (51.10%). The present study showed that there was significant difference among the feeds in terms of pore size. The highest average pore size and granule size were recorded in WRF and CF. The lowest average pore size and granule size was recorded in WF and CWF respectively. The physical and chemical properties of the extruded feeds were significantly different from each other, most likely due to the formation with respect to process parameters (temp. 110-120°C, Screw speed 28-35Hz, feeder speed 12-20Hz, and cutter speed 20-25 rpm) and properties of starch ingredients.

Keywords:

Starch, Effects, On, Extruded, Feed, Pellets, Characteristics

Effect of Plant based Protein Resources on Growth of *Labeo rohita*

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Abstract:

The fish group receiving the treatment T1, T2, T3 and T4 showed significant ($P<0.05$) increase in weight gain, improved FCR, SGR and PER. GSI, on the other hand, revealed no obvious alterations ($P>0.05$). The amounts of total protein, globulin, and glucose in the serum differed significantly ($P>0.05$) higher in T4. WBC count increased significantly ($P>0.05$), however there were no significant ($P>0.05$) changes in Haemoglobin or RBC count. Overall, the data indicate that dietary supplementation with Delonix regia leaf extract can boost growth and improve immunological response in *Labeo rohita* fingerlings. The use of medicinal herbs as nutraceutical for growth enhancement and immunity booster in fish feed is comparatively advantageous over the traditional chemotherapy as these are plant based feed additives which are biodegradable and renders no possible side effects. *Delonix regia*, also known as Gulmohar, the Flame Tree or Royal Poinciana, is a leguminous tropical tree species that belongs to the Fabaceae family. In present study its leaf extract exhibited high potency of antioxidant activity on growth and immunomodulatory effects on *Labeo rohita*. Five isocaloric and isonitrogenous diets (35% CP) were made with varying degrees of inclusion level *Delonix regia* Leaf extraxt(DRLE) viz. (Control-0% DRLE), T1(0.5% DRLE), T2(1 % DRLE), T3(1.5% DRLE) and T4(2% DRLE). The effect of DRLE on growth and immunity was found concentration dependent.

Keywords:

Delonix regia, Nutraceutical Immunostimulant, FCR, SGR, PER, Globulin, Serum

Drugs from Bugs: Prospecting Therapeutic Aantimicrobial Peptides from Insect Bio-Resource

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Abstract:

Swift evolution of resistance to current antibiotics in pathogenic microorganisms coupled with poor success rate in the development of newer therapeutic antibiotics through synthetic or combinatorial approaches led pharmacologists to search for antimicrobials from natural sources. This search for antimicrobials of organic origin led researchers to more rigorously screen arthropods in general and insects in specific as source of therapeutic compounds. The earliest report of such antimicrobial activity, the 'magic bullet', from insect extracts had been reported from Pastuer's lab in the beginning of the 20th century itself. Insects are dominant creature on the planet is not only due to high reproduction rate but also due to low extinction rate. An updated database was exclusively dedicated to insect antimicrobial peptides comprising of 1,066 Antimicrcobial Peptides (AMPs) of which 712 AMPs were experimentally validated and 354 AMPs were the predicted *Insilco*. The gross under evaluation of insects as source of AMPs can be estimated from the fact the database was composed of merely 0.0164 per cent of all known insect species explored thus far. All the AMPs listed in the data base were found to have been isolated from 164 species under nine orders. However, despite the under-exploration of insects for AMPs, it was interesting to find that there was a strong linear correlation between the number of insect species explored in each order and the number of AMPs reported (r=0.913; p<0.005). These results reflect high diversity of AMPs in insects and suggest that a more intensive exploration of insects for AMPs has the potential to yield a large number of AMPs. The insect species explored for AMPs are not random subsets of described species, it was tested against null hypothesis of random choice using the chi-square test. The test result showed that the observed frequency distribution and expected frequency distribution of insect species across orders were significantly different (χ^2=723.9; p<0.0001). This suggesting that the choice of species for prospecting AMPs is not random but biased towards few orders Diptera, Hymenoptera, Lepidoptera and Isoptera.

Keywords:

Bhringaraj, Organic and Inorganic Nutrients, Growth, Yield, Quality

Influence of Foliar Spray of Micronutrients on Growth and Yield in Kasuri Methi (*Trigonella corniculata L.*)

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Abstract:

Kasuri methi (*Trigonella corniculata*) is an important annual spice cum medicinal crop. Micronutrients spray plays a significant role in the production of high yield and helps in rapid correction of their deficiencies. Recently, foliar spray has been widely used and accepted as essential part of crop production, especially on horticultural crops. The current study on influence of foliar spray of micronutrients to improve growth and yield in *Trigonella corniculata* was conducted at the Department of Plantation, Spices, Medicinal and Aromatic Crops, College of Horticulture, Bengaluru during 2023-24. Three micronutrients such as iron, copper and zinc were evaluated at 2 different concentration @ 0.25 and 0.5 % and spice special @ 0.5% at 30 and 60 days after sowing. The study findings revealed that the highest plant height (46.913 cm), number of branches (18.2), plant spread (703.117 cm2), yield with respect to number of pods per plant (674.033) and early flowering (40 days) was observed in plants sprayed with zinc @ 0.25 %. Whereas in plants sprayed with copper @ 0.5 % had shown high fresh leaf yield per plot (703.733 g). From this study, it was proven that foliar spray of micronutrients such as zinc at 0.25 % has enhanced growth and yield of pods while copper at 0.5 % has increased the fresh leaf yield per plot.

Keywords:

Trigonella corniculata, Foliar Spray, Micronutrient, Growth

Design and Development of IoT based Smart Grain Storage Structure

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Abstract:

Grain storage structure is an essential component in the economy of developing country. The purpose of grain storage structure is to provide safe storage conditions for the grain in order to prevent grain loss caused by adverse weather, moisture, rodents, birds, insects and micro-organisms like fungi. Therefore, it is necessary to monitor and control the environmental conditions and parameters which are inside the grain storage structures. Pulses are considered to be a healthy vegetarian cuisine used for human consumption and excellent source of protein for millions of people who cannot afford animal protein for a balanced diet. The post-harvest losses of pulses are about 10-30% of their production in the subtropics due to improper storage practices. Hence proper storage guidelines and management protocols are needed. The integration of conventional methodology with latest technologies as Internet of Things can lead to agricultural modernization. In order to address the challenges of spoilage associated with conventional silos, an attempt was made to develop IoT based smart grain storage structure for pulses. The implementation of IoT-based smart grain storage structures represents an advanced technological approach to mitigating inefficiencies and addressing sustainability challenges inherent in conventional grain storage systems. By integrating cutting-edge sensors, automation and connectivity, these systems contribute to the realization of global sustainable development goals, specifically in the domains of food security, environmental sustainability and economic growth. This innovation facilitates the preservation of grain quality by maintaining optimal storage conditions through real-time monitoring and automated control of temperature, humidity and pest activity. Consequently, IoT-based smart grain storage structures are not only critical for advancing agricultural practices but also represent a valuable platform for research and development, fostering innovation in sustainable storage technologies. The developed system comprised three units interfaced together. These units were grain storage structure (500 kg capacity), the embedded system. The system was integrated to an IoT system (made up of mobile application, Wi-Fi module and automatic aeration controlling switches) and the air blowing system for aeration and ventilation of grain mass. The developed smart system was evaluated by storing chickpea grains for ten months. Results showed the developed system successfully monitored and controlled the storage air temperature, humidity and CO2 concentration, which are key parameters for long term storability of grains. The quality parameters including moisture content, free fatty acid, crude protein, carbohydrates, ash content, germination and infestation of the stored chickpea was evaluated at two months of interval up to ten months. Results showed better retention of moisture content, free fatty acid, crude protein, carbohydrates, ash content, germination of chickpea stored in smart silo as compared to conventional silo. The dhal obtained through wet milling of chickpea was 74.18% as compared to conventional silo which was 61.09%. The developed IoT based smart gain storage silo has great potential to facilitate long duration quality storage of pulses in rural households with real time information at minimum spoilage losses.

Keywords:

Grain Storage Structure, Chickpea, Temperature, Humidity and CO_2 Concentration

The Impact of Traffic Congestion on Tourist Behavior Among Foreign Tourist in the City of Manila, Philippines

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Abstract:

Traffic congestion is a persistent issue in urban areas, especially in highly populated cities like Manila. It affects not only daily commuters but also tourists who prioritize convenience and accessibility during their travels. Studies shows that Manila falls behind in terms of car-free areas and is the only one in the Asia-Pacific area whose public transportation system is categorized as lagging city. This lack of infrastructure leads to limited public transport options, forcing greater reliance on private vehicles and further exacerbating congestion. This study examines the impact of traffic congestion on tourist behavior in the City of Manila. Using survey data from foreign tourists, it identifies patterns and highlights root causes and key challenges, such as inadequate transport infrastructure, safety concerns, and the effect of congestion on tourists' dissatisfaction with their travels, choice of destinations, and likelihood of repeat visits.

The findings reveal that traffic congestion significantly influences tourists' choice of destinations, their likeliness of returning, and the overall satisfaction. Notably, the study found no significant difference in responses when grouped by age, sex, nationality, or city of residence, emphasizing the universal nature of the problem. Analysis of Tables 8.1 and 8.2 further highlights the strong connection between poor transport infrastructure and reduced road user safety, further illustrating the need for sustainable urban planning. This research contributes to understanding how urban mobility issues affect tourism in the City of Manila, providing actionable insights for policymakers to enhance the city's appeal as a tourist destination. Addressing traffic congestion through investments in public transportation, car-free initiatives, and sustainable urban planning can enhance tourist satisfaction, boost economic growth, and create a more sustainable urban environment.

The Role of Nutrition and Diet in Promoting Healthy Aging

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Abstract:

The global increase in the older population presents significant challenges in preserving health and preventing age-related diseases. Healthy aging extends beyond the mere absence of illness; it includes the maintenance of functional independence, Cognitive health and overall well-being. Nutrition plays a vital role in promoting healthy aging by supporting both physical health and mental function throughout the lifespan. A nutrient-dense, well-balanced diet is fundamental for sustaining physiological functions, preventing chronic conditions, and enhancing overall quality of life. A well-balanced diet plays a crucial role in promoting healthy aging. Essential nutrients, including proteins, vitamins, minerals, healthy fats, and fiber, are critical for optimal bodily function. Adequate protein intake is essential for preserving muscle mass, which naturally declines with age and contributes to frailty, falls, and fractures. Calcium and vitamin D are vital for maintaining bone density and preventing osteoporosis. Healthy fats, particularly omega-3 fatty acids, are important for cardiovascular health and may have neuroprotective effects that enhance cognitive function and reduce the risk of neurodegenerative diseases such as Alzheimer's and Parkinson's. Antioxidants, found in fruits, vegetables, and whole grains, mitigate oxidative stress and inflammation—key contributors to aging and the development of chronic diseases.

In addition to essential macronutrients and micronutrients, adequate hydration plays a pivotal role in promoting healthy aging. Older adults are particularly susceptible to dehydration due to a diminished sense of thirst and alterations in renal function, which increase the risk of complications such as urinary tract infections, constipation, and cognitive decline. Furthermore, regulating caloric intake and practicing portion control are vital for preventing obesity, a condition closely associated with various Associated diseases, including diabetes, cardiovascular diseases, and musculoskeletal disorders. Dietary patterns that emphasize nutrient-dense, whole foods, while limiting processed foods high in sugar, unhealthy fats, and sodium, are linked to improved health outcomes. However, older adults face unique challenges, including dental issues, reduced appetite, and difficulties with chewing or swallowing, which may hinder their ability to maintain a balanced diet. Polypharmacy, common in older populations, can also interfere with nutrient absorption, highlighting the need for integrated nutritional and medical planning. When designing nutritional interventions for older adults, it is crucial to consider factors such as cultural food preferences, food accessibility, and psychological influences like depression and social isolation. A comprehensive, individualized approach to nutrition, emphasizing nutrient-rich foods, adequate hydration, and balanced caloric intake, can significantly improve both the quantity and quality of life in aging individuals. Combined with other lifestyle factors, such as physical activity and social engagement, this approach is essential for promoting successful aging and optimizing both lifespan and healthspan.

Keywords:

Healthy aging, Nutrition, Chronic conditions, Cognitive health, Macronutrients, Micronutrients and Hydration

Water Harvesting through Indigenous Method for Sustainable Use in Meghalaya, India

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Abstract:

Bamboo drip irrigation system is a 200-year-old system of tapping stream and spring water by using bamboo pipes. This irrigation system is prevalent in Meghalaya. This present paper will discuss the indigenous method that have long entrusted the use of bamboo drip irrigation as a means to fulfilling domestic, agricultural, and customary needs. Its function remains unspoiled so as the rains continue to fall and the bamboo continues to grow.

Keywords:

Indigenous, Irrigation, Harvest, Water, Bamboo, Drip

IFERP Life Sciences

Advancements in Toxicology: Interconnections and Impact on Health

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Abstract:

Toxicology is the science of understanding the adverse effects of chemical, physical, and biological agents on living organisms. This field plays a crucial role in identifying and mitigating the risks associated with various environmental and synthetic toxins that affect human health and ecosystems. The field emphasizes the complex interplay between various types of toxins—industrial chemicals, pharmaceuticals, pesticides, and environmental pollutants—and their cumulative impact on biological systems. Emerging research highlights the role of epigenetics and metabolomics in understanding how toxins influence gene expression and metabolic pathways. The interconnectedness between different pollutants, such as the synergistic effects of air and water contaminants, underscores the importance of a holistic approach to studying toxic exposures. Moreover, the rapid rise of nanotechnology introduces new challenges, as nanoparticles present unique toxicological profiles due to their size, shape, and reactivity.

Impact on Health: Toxicological advancements have revealed critical links between exposure to pollutants and the increasing prevalence of chronic diseases such as cancer, diabetes, and cardiovascular disorders. Neurotoxins, such as heavy metals and organophosphates, are associated with developmental delays and neurodegenerative diseases, emphasizing the vulnerability of certain populations, particularly children and the elderly. Recent studies have shown that endocrine-disrupting chemicals, found in everyday items like plastics and cosmetics, contribute to hormonal imbalances, reproductive issues, and metabolic disorders. Furthermore, the global health crisis of air pollution, responsible for millions of premature deaths annually, is intricately tied to fine particulate matter (PM2.5), which has been linked to respiratory and cardiovascular diseases.

Technological Advancements: Cutting-edge methodologies have reshaped toxicology, making it more predictive, precise, and preventive. High-throughput screening and omics technologies—such as genomics, transcriptomics, proteomics, and metabolomics—allow for the simultaneous analysis of thousands of substances. Computational toxicology and in silico models simulate toxicological interactions, reducing the reliance on animal testing and accelerating the assessment process. Advanced imaging techniques and biomarker identification provide real-time insights into cellular and molecular toxicity pathways.

Future Directions and Challenges: While advancements in toxicology hold immense promise, challenges persist in addressing complex exposures such as mixture toxicity and chronic low-dose exposures. There is a growing emphasis on the "One Health" approach, integrating human, animal, and environmental health perspectives to address global toxicological challenges comprehensively. Regulatory frameworks must adapt to incorporate new findings and technologies, ensuring timely risk assessment and policy implementation.

Conclusion: The advancements in toxicology underscore its critical role in safeguarding health amidst increasing environmental and technological complexities. By bridging gaps in understanding, fostering innovation, and emphasizing prevention, toxicology provides essential tools for addressing current and future health challenges.

Keywords:

Toxicology, Pollutants, Health Impacts, Computational Toxicology, Omics Technologies, Endocrine Disruptors, Environmental Toxins, Nanoparticle Toxicity, One Health, Mixture Toxicity

Osteological Variation of Caudal Skeleton of Some Barbs from Tripura

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Abstract:

Most barbs belong to family Cyprinidae comprising of small to medium sized fishes, distributed mostly in tropical habitats of Asian countries. Osteological study of genus *Puntius* (*P. chola, P. sophore, P. conchonius and P. ticto*) and genus Barbonymus (*B. gonionotus*) were studied to evaluate their caudal skeleton. The specimens were collected from different rivers of Tripura using various fishing gears like cast net, scoop net and gill net. In the present study, presence of four hypural was noticed in the upper lobe and two on the lower lobe in all the species. The morphology of hypurals exhibited variations which attribute to divide these barb species into two groups: one group where first hypural is wider, followed by fourth hypural and in other group, with wider first hypural, followed by third hypural. Lepidotricks attachment to first neural spine also exhibited some variations among the species.

Keywords:

Osteology, Caudal Skeleton, Barbs, Tripura