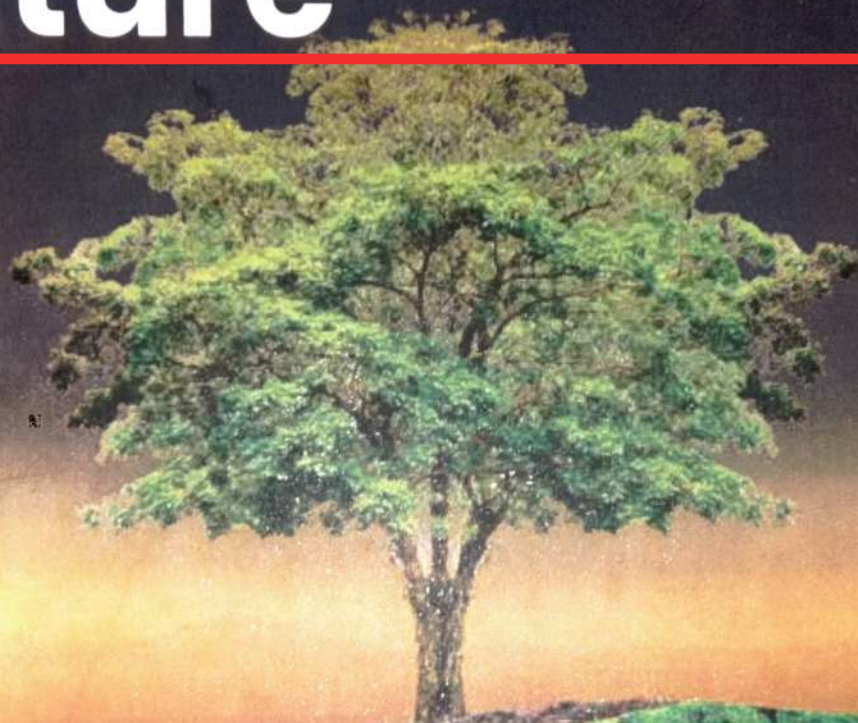




Life Science For A Sustainable Future



General Editor

Meera George, Ph.D

LIFE SCIENCE FOR A SUSTAINABLE FUTURE

**SEMINAR PROCEEDINGS OF THE INTERNATIONAL
CONFERENCE ON CURRENT TRENDS IN LIFE
SCIENCE FOR A SUSTAINABLE FUTURE**

August 2022



LIFE SCIENCE FOR A SUSTAINABLE FUTURE
(Seminar Proceedings of the International Conference on Current
Trends in life Science for a Sustainable Future)

First Published
August 2022

General Editor
Meera George, Ph. D

Published by
Romanson Printing & Publishing House Pvt. Ltd.
S.S. Kovil Road, PTC Tower, Thiruvananthapuram-01
Tel: +91 471 4250 555
Mob: +91 91 88 2 99 001



Mar Ivanios College
Mar Ivanios Vidya Nagar, Bethany Hills, Nalanchira P.O.
Thiruvananthapuram - 695015, Kerala, India.

Print & Cover

Romanson Print House

S.S. Kovil Road, PTC Tower, Thiruvananthapuram-01
Mob: +91 91 88 2 99 002

No part of this publication may be reproduced or
transmitted in any form or by any means without prior
written permission of the Publisher.

ISBN : 978-93-93876-20-1

General Editor

Meera George, Ph.D

Assistant Professor & Head, PG and
Research Department of Zoology
Mar Ivanios College (Autonomous)
Thiruvananthapuram - 15

Sub Editors

C. Suju Skaria, Ph.D

Asst. Professor & Head
Department of Botany
Mar Ivanios College

Deepthy Alex, Ph.D

Asst. Professor & Head
Department of Biotechnology
Mar Ivanios College



Romanson Printing & Publishing House Pvt. Ltd.

- | | | |
|-----|---|----|
| 17. | Comparitive study of Collembolan diveristy in different organiz and conventional agro - ecosystems of Thiruvananthapuram, Kerala. | 67 |
| 18. | Dietary behavior with respect to the relative gut length of <i>Terapon jarbua</i> from the south coast of Kerala. | 69 |

Theme 3

Environmetal Biotechnology

- | | | |
|----|--|----|
| 1. | The conversion of latex sludge into biocompost an organic approach. | 73 |
| 2. | A scorpion venom peptide Bmkn2 with potent antiviral activity against therapeutic targets of Sars-Cov-2. | 75 |
| 3. | Optimization for production of cellulase enzyme from water hyacinth using <i>Trichoderma viride</i> by solid State fermentation. | 77 |
| 4. | Comparative study of biofilm inhibition by <i>Pseudomonas</i> spp & <i>Staphylococcus</i> spp. | 79 |
| 5. | Effect of electromagnetic radiation from cell phone on the gene expression in chick embryo. | 81 |

Theme 4

Environment and Climate Change

- | | | |
|----|---|----|
| 1. | Bacterial contamination in river water : A review on Kallada, Southern Kerala. | 87 |
| 2. | Utility of an Open-Data Citizen-Science tool in the assessment of Covid-19 induced bio-waste littering in select localities of Thiruvananthapuram District. | 88 |

| | | |
|--------------------------------|---|-----|
| 3. | Analysis of physico-chemical status of soil samples exposed to different pollution sources. | 90 |
| 4. | Sub - lethal ill effects of some selected pesticides on <i>Cyphoderus javanus</i> in laboratory experiments. | 92 |
| 5. | Comparative study on the effect of two agrochemicals on the fecundity of a soil isopod- <i>Cylisticus convexus</i> . | 94 |
| 6. | Above ground biomass estimation of selected vegetation types in Vithura Region, Thiruvananthapuram Using gis and Remote Sensing. | 95 |
| 7. | Scanning electron microscopic studies on pineapple plant (<i>Ananas comosus</i>) stem starch- an approach towards the effective utilization of an agro-waste. | 97 |
| 8. | Eco-tourism - A case study of Vellayani lake. | 98 |
| 9. | Impact of abattoir wastes on the physico-chemical properties of soil with special reference to heavy metals in selected areas of Anchal Block Panchayat of Kollam District. | 99 |
| 10. | Impact of herbicide (Altrazine) on the reproductive biology of <i>Bilobella braunerae</i> , (Collembola : Neanuridae). | 101 |
| 11. | Production of bioplastic from drained rice water starch: the prospective of using cellulose nanofibres to improve the tensile strength | 103 |
| Theme 5 | | 105 |
| Health and Food Science | | |
| 1. | Medium optimization for enhanced biomass production of <i>Bacillus Sp.</i> | 107 |

Above Ground Biomass Estimation of Selected Vegetation Types in Vithura Region, Thiruvananthapuram Using GIS and Remote Sensing

¹Rehitha Prasannan S, ¹Smitha Asok V and ²Rajesh Reghunath*

Abstract :

About 90% of all live terrestrial biomass is found in forests, which are a primary source of carbon storage in terrestrial ecosystems and act as a carbon sink to help slow down the effects of climate change and global warming. Forest aboveground biomass (AGB) plays an important role in the study of the carbon cycle and climate change in the global terrestrial ecosystem. The main aims of this study were to estimate above-ground biomass from field inventory data and to map AGB by combining field inventory data, remote sensing and geostatistical models in the Vithura region of Thiruvananthapuram. Vithura is a small village situated on the way to Ponmudi, about 37 km from Thiruvananthapuram, the capital of Kerala, surrounded by the western ghats and blessed with numerous trees and extensive green land. A total of 14 plots and 5 vegetation indices were used to estimate the AGB of the study area. The vegetation indices used in this study were ARVI, NDVI, GNDVI, NDREI1, and NDREI2. The AGB from field measurement was calculated using allometric equations. The mean of field AGB was 172.387503t/ha with maximum value of 490.91506 t/ha and minimum value of 10.07827856 t/ha. The correlation between the biomass value measured in each plot and the variables extracted

from the optical image was assessed by the Pearson correlation coefficients. GNDVI ($R^2=0.849$) exhibited a strong correlation with AGB followed by NDREI2 ($R^2=0.7065$). The AGB map for the whole area of the Vithura region was estimated by developing a linear regression model. The model was developed using variables GNDVI and NDREI2 because of their high R^2 value and low p value.

Keywords: AGB Estimation, vegetation analysis, NDVI, GNDVI, NDREI1, NDREI2

*₁ PG and Research Department of Environmental Sciences, All Saints' College, Thiruvananthapuram-695007, Kerala
₂ International and Inter University Centre for Natural Resources Management, University of Kerala, Karyavttom, Thiruvananthapuram-695581, Kerala , Phone number : 7994302129
email id : rehithaprasannan@gmail.com