Preface

Journal website : www.jeb.co.in ★ E-mail : editor@jeb.co.in

Journal of Environmental Biology

JEB™ p-ISSN: 0254-8704
e-ISSN: 2394-0379
CODEN: JEBIDP

Recent Advancement in Earth Sciences and Environment Research

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As a Guest Editor, I am delighted to present the issue entitled: "**Recent Advancements in Earth Sciences & Environmental Research**". This issue highlights research pertaining to the field of Earth Sciences and Environment from the researchers of Vietnam, Bangladesh and Malaysia, which has a supreme importance for the insight of sustainable management of natural resources. In total 25 research papers received from the researchers were submitted to the *Journal of Environmental Biology*, out of which 22 papers after critical peer review and editing were selected for the publication of this issue. This issue covers varied topics related to Pollution, Earth Science, Bioremediation, Forestry, Wild life conservation, Plant Physiology, Weed Science, Aquaculture, Microbiology, Soil Sciences, etc., The highlights of all the 22 papers are as follows:.

First paper describes the growth of *Shorea platycarpa* and *Macaranga pruinose* exposed to ambient CO_2 (400 µmol mol^{-1}) and elevated CO_2 (800 µmol mol_{-1}) for seven months. It was observed that elevated CO_2 significantly increased the height, diameter relative growth rate and biomass characteristics.

Second paper demonstrates several techniques to evaluate zeolite properties. These zeolites from Yemen were tested to examine their types and industrial potential. Based on the analysis, the type of zeolite found in Yemen can be classified as clinoptilolite-heulandite and is suitable as a filler in the paper industry.

In paper three, application of response surface methodology to determine optimum parameters in the coagulation-flocculation process aided by curcumin for boron removal from aqueous solution was conducted. The results showed 75% of boron removal, while the optimum parameters for boron removal were observed at pH 2.8, poly aluminum chloride dose 132.05 ppm and curcumin dose 1161.4 ppm, respectively.

Paper four, reports the variability of black soldier fly larvae treatment in comparison to different sources of substrates with an emphasis on protein and carbohydrate with regards to black soldier fly larvae growth and the physico-chemical characteristics of final compost. They found that the black soldier fly larvae prefer to accumulate protein food residues rather than carbohydrate food residues, thus emphasizing that protein content is vital for its growth. The unfavourable nutrients from food waste is considered to be a significant factor that can affect the development, production and efficiency of life stage of composting black soldier fly larvae.

Paper five assesses the allelopathic potential of 100 plants species including noxious weeds and medicinal plants in Malaysia as donor plants on the growth of *Lactuca sativa* (lettuce) as a recipient plant. This study was also carried out to justify common weeds found in Malaysia to act as a natural herbicide for weed management through allelopathy phenomenon. They found that higher amount (50 mg) of weed and medicinal plants leaf litter strongly suppressed the growth of *L. sativa* rather than lower amount of weed leaf litter at 10 mg.

Discussion on biological technique using plants namely *Ipomoea aquatica* and *Pistia stratiotes* for phytoremediation of landfill leachate is presented in paper six. Here, important parameters of landfill were determined and later the changes in the values of these parameters were observed when two plants were used as biorenediators for the leachate.

Paper seven, discuss the concentration of ^{210}Pb in mussels (Pernaviridis), seawater and sediment samples from nine stations along the Johor Straits during Northeast monsoon (November 2017), inter-monsoon (March 2018), and Southwest monsoon (August 2018). The results reveal that ^{210}Pb activities in sediment increase relatively with the organic matter contents as well as ^{210}Pb in mussel's tissue, especially adjacent to the causeway structure.

Paper eight, focus on measuring the water quality index and pesticide levels (metsulfuron methyl) at 3 river areas in Selangor, Malaysia. The results indicate that the water quality and pesticide levels are not influenced by environmental factors as no significant difference was found in three locations.

Paper nine, covers the technique to predict areas that are suitable as a habitat for Malayan Gaur in the Malaysian Forest. As developing countries, forest and other land uses are often located close to each other causing fragmentation of forest. In this study, the authors produce a potential suitability map to indicate areas that are suitable as habitat for this animal and also the possible connectivity among fragmented forest patches.

Paper ten is related to animal conservation in Malaysia. The study assessed leopard distribution as a base to identify suitable habitat for this animal in the Taman Negara National Park and other forest close to its vicinity.

How temperature and diet can affect the enzyme activity in a fish has been described in paper eleven. The results indicate that enzyme activity in a fish can be increased by increasing water temperature. Moreover, diet can have positive impact on the enzyme activity in fish. This paper recommends to culture hybrid grouper at 30°C temperature feeding with shrimp diet in order to enhance their production.

Paper twelve, reports the standing stock of macrobenthos along a depth gradient at regional scales in the Sunda Shelf of Malaysia. The results reveal that variations in the macrobenthic community is significantly associated with depth, temperature and salinity.

The water quality estimation and Chironomidae sampling of three rivers in Cameron Highlands, Malaysia was explored in paper thirteen. It reveales thirteen different sub-group of Polypedilum based mouthpart organs, which represent different species for tropical ecosystems.

Possible climate change effect on temperature and pH to marine organisms is discussed in paper fourteen. The authors reveal that changes or disturbances in temperature and pH may have negative implications on the ecological aspect of marine lives.

In paper fifteen, potential antibacterial activity from macroalgae tissue was screened using cross streak and disc diffusion methods against six human pathogenic bacteria. Interestingly, 13 out of 27 species possess antibacterial properties.

Paper sixteen determines the concentration of PAHs by layers in each core sediment around one of Malaysia's tourism-oriented areas, in Langkawi and to distinguish and classify the origin of PAHs in core sediments using index of molecular ratios. They found that Kuah Jetty, Langkawi were classified in the range of low to moderate pollution while the molecular ratio index established by Phe/Ant and Fluo/Pyr indicated that most layers were dominated by the petrogenic source of PAHs such as direct spillage of petroleum onto the sediment.

The potential of selected *P. polystachion* as biological material in soil bio-engineering for improving the soil shear strength of sandy soil planted with *P. polystachion* has been investigated in paper seventeen. This study suggests the potential application of this specie for slope vegetation can improve the erosion control and slope stability in soil-bioengineering scheme.

The relationship between the microhabitat conditions, soil physico-chemical characters of *Rafflesia* plant communities and the similarities across *Rafflesia* habitats in Royal Belum State Park, Perak, Peninsular Malaysia were investigated in paper eighteen.This study shows that different plant communities favour different conditions in terms of microhabitat condition and the physico-chemical characteristics of soil, despite being located within the same forest range.

Paper nineteen, investigates the taxonomic value of leaf anatomical characteristics and to determine the anatomical features that enables the species to adapt to different environmental conditions. The findings show some common anatomical characteristics shared in all species studied, such as incomplete leaf venation, presence of trichome and schlerenchyma cells, and the presence of

mucilaginous idioblast cells in the petiole and midrib. Straight-to-sinuous anticlinal cell walls, amphistomatic leaves, and three types of stomata: parasitic, anomocytic and staurocytic were found in this study.

Paper twenty investigates the potential of waste shell powder as an adsorbent material for reducing COD and ammoniacal nitrogen from stabilized leachate wastewater. Mussel shell powder adsorption of leachate is monolayer adsorption on homogeneous surface adsorbent. The mussel shell powder provides a significantly lower cost-effective medium for reducing COD and ammoniacal nitrogen.

In paper twenty one, female and male goby, *Glossogobius sparsipapillus* was experimented to study different developmental stages of oocytes and spermatocytes. The results showed that fecundity was positively related to fish length and weight, indicating it increased as fish grew.

Weeds composition and their characteristics were studied and discussed in paper twenty two. The authors outline the type of weed species that grew in paddy field and knowing their characteristics may help to control them in the future.

I believe the varied topics presented in this issue would be a good reference material not only for the research scholars, scientists, academicians but also for the readers who are keen and interested to gain knowledge with the ongoing research.

I would like to thank the authors of this issue for enthusiastically contributing their research papers for this issue, and making best efforts to enhance the scientific quality of their research paper by complying the comments of the reviewers. The reviewers of this issue deserve special thanks for sparing time from their busy schedule to critically evaluate and review the papers in order to improve the scientific quality of the papers. Further, I deeply thank the Associate Editors, Dr. Norbert Simon and Dr. Marlia Mohd Hanafiah for their continuous support in order to communicate with reviewers, critical review and finalizing the paper based on their expertise.

I would like to extend my sincere gratitude and thanks to the Editor-in-chief, Dr. R. C. Dalela for not only accepting this Special issue but also for his continuous support, guidance, and coordination in bringing forth this Special issue. I am thankful to the Editorial Board and Professionals of R & D Division for critically evaluating the research papers. I duly acknowledge the contribution of secretarial and publication team of *Journal of Environmental Biology* in the success of this Special issue.