Review Form 3

Journal Name:	**Journal of Materials Science Research and Reviews**
Manuscript Number:	**Ms_JMSRR_126355**
Title of the Manuscript:	**Application of Recycled Plastic Media to Enhance Waste Water Treatment Plant Operation for Subterranean Flow Constructed Wetlands**
Type of the Article	**Original Research Article**

Review Form 3

PART 1: Review Comments

Compulsory REVISION comments	**Reviewer's comment**	**Author's Feedback** *(Please correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)*
Please write a few sentences regarding the importance of this manuscript for the scientific community. Why do you like (or dislike) this manuscript? A minimum of 3-4 sentences may be required for this part.	This manuscript contributes significant insights into sustainable wastewater treatment, focusing on the use of recycled plastic media in subterranean flow constructed wetlands. The research is particularly valuable because it addresses pressing environmental issues by examining how repurposed plastic materials can enhance biomass growth and improve water purification, supporting both pollution reduction and resource efficiency. By advancing our understanding of alternative, eco-friendly growth media, this study aligns well with global efforts to improve wastewater management and reduce plastic waste. The findings could inspire future work and applications in biofilm formation, bioremediation, and the optimization of constructed wetlands in various climates and conditions.	
Is the title of the article suitable? **(If not please suggest an alternative title)**	Yes, the title is generally suitable, as it clearly conveys the study's focus on the application of recycled plastic media in wastewater treatment for subterranean flow constructed wetlands.	
Is the abstract of the article comprehensive? Do you suggest the addition (or deletion) of some points in this section? Please write your suggestions here.	The abstract is mostly comprehensive, covering the purpose, methodology, results, and implications of the study. However, it could benefit from slight adjustments: • The words *"future"* and *"growth"* in the last paragraph are misspelled as *"ffuture"* and *"ggrowth"*; they should be corrected. • The first sentence of the current abstract resembles an introductory sentence. I suggest beginning with a brief statement highlighting the significance of sustainable wastewater treatment, such as: *"This study investigates sustainable wastewater treatment through the use of recycled plastic media in subterranean flow constructed wetlands."* • It would be preferable to use the term *"Polystyrene"* rather than *"Polystyrole"* or *"Polystyrol" (as further mentioned below)*, as *"Polystyrene"* is the internationally recognized term commonly used in scientific literature. • Ensure that the names and abbreviations for the plastics used are consistent and standardized. The first mention of each plastic in the abstract should include its abbreviation in parentheses: Polyethylene terephthalate (PET), high-density polyethylene (PE-HD), polyvinyl chloride (PVC), low-density polyethylene (PE-LD), polypropylene (PP), and polystyrene (PS). Abbreviations should be consistent throughout the manuscript. For instance, *"high-density polyethylene (PE-HD)"* should be used everywhere it's mentioned instead of *"High Density Polyethylene (HDPE)"* as seen elsewhere in the text (paragraph under Fig. 2) or *Polyethylene high density.* The same thing goes for low-density polyethylene (PE-LD). • Please use single-word keywords rather than multi-word phrases where possible. •	
Are subsections and structure of the manuscript appropriate?	The subsections and structure of the manuscript are generally appropriate. However, there are a few minor typos that need correction. The subtitle numbering under Section 2 is incorrect, with the number 2.2 repeated three times. This should be adjusted for consistency.	
Please write a few sentences regarding the scientific correctness of this manuscript. Why do you think that this manuscript is scientifically robust and technically sound? A minimum of 3-4 sentences may be required for this part.	This manuscript is scientifically sound, featuring a rigorous experimental design with defined sampling intervals and biomass measurements across varied recycled plastic media, ensuring accuracy and reproducibility. By using established methodologies in biofilm measurement and wastewater treatment, the study aligns with sustainability goals, addressing key environmental challenges. The data presentation effectively supports its conclusions, offering valuable insights for applications in bioremediation and sustainable wastewater management. However, there are minor issues needing correction to enhance clarity and precision. For instance, the growth rate for Styrofoam peanuts in Fig. 1 appears inaccurately cited in the text as 2.27 g/day instead of the approximate visible 7 g/day. Additionally, there is a typo in Section 2.4 with *"biomass fil"* needing correction to *"biomass film"*, and several other minor typos throughout, including inconsistent capitalization after periods. Lastly, for measurement consistency, the choice of only two measurement points (33% and 66%) in Cell 4 should be justified, as it deviates from the standard three-point configuration (25%, 50%, and 75%) used for other cells. Addressing these points would improve both clarity and scientific rigor.	

Review Form 3

Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form. **:**	The references are mostly sufficient, covering foundational studies and relevant legislation. However, a couple are over a decade old, and more recent studies could enhance scientific context and relevance to current practices. Adding recent reviews on recycled materials in wastewater treatment would add depth and reflect recent advancements. Additionally, in-text citations should follow the journal format of (Author name, year) instead of brackets with numbers. The following studies are suggested as more recent references: • Sandoval L. et al. (2019), Evaluation of Wastewater Treatment by Microcosms of Vertical Subsurface Wetlands in Partially Saturated Conditions Planted with Ornamental Plants and Filled with Mineral and Plastic Substrates • Wang L. et al. (2024), Research Progress on the Removal of Contaminants from Wastewater by Constructed Wetland Substrate: A Review • Jiang C. et al. (2024), Treatment of Domestic Wastewater and Extracellular Polymeric Substance Accumulation in Siphon-Type Composite Vertical Subsurface Flow Constructed Wetland • Kotsia D. et al. (2024), Use of Recycled Construction and Demolition Waste as Substrate in Constructed Wetlands for the Wastewater Treatment of Cheese Production •	
Minor REVISION comments **Is the language/English quality of the article suitable for scholarly communications?**	The language quality is generally suitable for scholarly communication. Minor issues, such as typographical errors and inconsistent terminology (e.g., "PE-HD" vs. "HDPE"), slightly detract from readability. Correcting these would improve clarity and enhance the manuscript's professionalism.	
Optional/General comments	I have little to add, as most points have been covered above. However, please ensure consistent formatting of tables and figures, particularly with captions and placement, to align with the journal's guidelines. Also, include recent studies with proper citations, and avoid using websites with lengthy, complex URLs.	

PART 2:

	Reviewer's comment	**Author's comment** *(if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)*
Are there ethical issues in this manuscript?	*(If yes, Kindly please write down the ethical issues here in details)*	

Reviewer Details:

Name:	**Alif Ngimbi Diambu**
Department, University & Country	**İzmir Katip Çelebi University, Türkiye**