

Review Form 1.7

Journal Name:	International Journal of Environment and Climate Change
Manuscript Number:	Ms_IJECC_99170
Title of the Manuscript:	Technological breakthrough for large scale bioconversion of coir pith: A quantum jump towards sustainable soil health management and development of source point Methane Abatement Model.
Type of the Article	Research Article

General guideline for Peer Review process:

This journal's peer review policy states that **NO** manuscript should be rejected only on the basis of '**lack of Novelty**', provided the manuscript is scientifically robust and technically sound.

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PART 1: Review Comments

	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)
<p>Compulsory REVISION comments</p> <p>1. Is the manuscript important for scientific community? (Please write a few sentences on this manuscript)</p> <p>2. Is the title of the article suitable? (If not please suggest an alternative title)</p> <p>3. Is the abstract of the article comprehensive?</p> <p>4. Are subsections and structure of the manuscript appropriate?</p> <p>5. Do you think the manuscript is scientifically correct?</p> <p>6. Are the references sufficient and recent? If you have suggestion of additional references, please mention in the review form.</p> <p>7. Apart from above mentioned 6 points, reviewers are free to provide additional suggestions/comments.</p>	<p>1. The coir pith is a spongy material that binds the coconut fiber in the husk, coir pith is finding new applications. It is an excellent soil conditioner and is being extensively used as a soil-less medium for agri-horticultural purposes. With its moisture retention qualities, the coir pith is ideal for growing anthuriums and orchids. The advantages of coir pith compost over other compost materials are it adds micronutrients to the soil enhances the microbial activity and reduces soil erosion.</p> <p>2. I personally do not like this title because it's too long. In addition, the author mentions the word "quantum" which in physics has a very precise and different meaning from the one used in this work. Why not simply: "A Technological Improvement for Large-scale Bioconversion of Coir Pith".</p> <p>3. In my opinion, written in this form, the abstract is not very attractive. The abstract is too long and the author dwells on descriptions that should instead be delegated to the sections of the manuscript. It is advisable to completely rewrite the abstract so that it begins with a brief, but precise, statement of the problem or issue, followed by a description of the research method and design, the main results, and the conclusions reached.</p> <p>4. Yes, even if, in my opinion, some supplementary information and clarifications are needed, perhaps expanding the "Introduction" section (see the suggestions mentioned in point 7. below).</p> <p>5. Yes.</p> <p>6. I suggest also citing the following works: [1] P. Figueiredo et al., <i>Properties and chemical modifications of lignin: Towards lignin-based nanomaterials for biomedical applications</i>, Prog. Mater. Sci.;93, 233 (2018). [2] W.J. Gao and P. Fatehi, <i>Lignin for polymer and nanoparticle production: Current status and challenges</i>, Can. J. Chem. Eng., 97, 2827 (2019). [3] X.Y. He et al. <i>Thermal, antioxidant and swelling behaviour of transparent polyvinyl (alcohol) films in presence of hydrophobic citric acid-modified lignin nanoparticles</i>, Int. J. Biol. Macromol., 127, 665. (2109). [4] S. Kim et al., <i>Chitosan-lignosulfonates sonochemical prepared nanoparticles: Characterisation and potential applications.</i>, Colloids Surf. B., 103, 1 (2013). [5] J. Azimvand et al., <i>Safranin-O removal from aqueous solutions using lignin nanoparticle-g-polyacrylic acid adsorbent: Synthesis, properties, and application</i>, Adsorpt. Sci. Technol.,36, 1422 (2018).</p> <p>7. The following suggestions are intended to help fill some gaps in this work. 7a. Please, ensure that all the acronyms introduced in the manuscript have duly been specified when they appear for the first time in the text, even when they are well-known in the literature (e.g., in the Abstract, please specify the acronyms IORF=<i>Inhana Organic Research Foundation</i>, ACFA, IPCC, GHG, SDG, etc.). 7b. Please, mention the main disadvantages of composting (<i>Composting requires an initial investment, its effectiveness is contingent on the quantity of organic waste, composting creates a smell that is unpleasant, snakes, rats, and bugs could be attracted by it, many hours of work are involved and a lot of space is needed, etc. Furthermore, it may have a negative environmental impact. Indeed, if a compost pile is anaerobic, there are more serious consequences than the stench. When a pile doesn't have oxygen, it emits methane, a harmful greenhouse gas, according to the United States Composting Council</i>). 7c. For easy reference, it would be useful to recall to the reader what are the 4 types of composting (<i>There are four primary compost types: compost, farmyard manure, green manure, and vermicompost. Each type has its own benefit alongside mutual benefits. The point of compost is to nourish your soil to provide a healthy habitat in which your grass, plants, and trees can thrive</i>). 7d. For completeness, please mention the main problems faced by the coir industrial unit (e.g., <i>poor labor productivity, machine breakdowns, low demand rate, power cut problems and higher power charges, and marketing of finished products</i>).</p>	

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	<p>7e. Concerning subsection 3.1.2, before facing the problem of the degradation of lignin in coir pith, it is advisable to describe the composition of coir pith (<i>Raw coir pith shows the highest percentage of lignin, hemicelluloses, and wax and the lowest percentage of α-cellulose. The percentage of α-cellulose, hemicelluloses, lignin, and wax present in raw coir pith is 27.41%, 14.63%, 42.0%, and 10.16% respectively</i>).</p> <p>7f. The author mentions the central theme of management and abatement of methane at the source point. For completeness, he/she should also clarify why it is so important to capture or manage methane (<i>Managing methane is important because methane is a potent greenhouse gas that contributes to climate change if allowed to escape into the atmosphere. It is considered a more potent greenhouse gas than carbon dioxide and can be hazardous to store and manage</i>).</p> <p>7g. As known, the lignin polymer is highly recalcitrant towards chemical and biological degradation due to its molecular architecture, where different non-phenolic phenylpropanoid units form a complex three-dimensional network linked by a variety of ether and carbon-carbon bonds. For easy reference for the reader, the author should also mention the reason why the two main parameters <i>Lignosulfonate</i> and <i>Enzymatic Hydrolysis Lignin</i> constitute the two main limitations of lignin (<i>a structural change of lignin and the low purity after isolation, and very low solubility in either water or some organic solvents</i>).</p>	
<p>Minor REVISION comments 1. Is language/English quality of the article suitable for scholarly communications?</p>	<p>1. The manuscript is clearly written in good English; only a few (minor) typos were found.</p>	
<p>Optional/General comments</p>	<p>The manuscript deals with an interesting and topical research subject. However, there are some vulnerabilities that, in my opinion, should be addressed. In particular, i) the Abstract is too long and not written in an attractive manner; ii) Some sections are well described while others need additional information; iii) At times, this work is more descriptive than technical (some important technical details are not reported exhaustively).</p>	

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)
<p>Are there ethical issues in this manuscript?</p>	<p><i>(If yes, Kindly please write down the ethical issues here in details)</i></p>	

Reviewer Details:

Name:	Giorgio Sonnino
Department, University & Country	Universite' Libre de Bruxelles, Belgium