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Journal Name:	International Journal of Plant & Soil Science
Manuscript Number:	Ms_IJPSS_18589
Title of the Manuscript:	Impact of lead on Coriandrum Sativum development: physiological and biochemical study
Type of the Article	Short 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.

To know the complete guideline for Peer Review process, reviewers are requested to visit this link:

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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)
Compulsory REVISION comments	<p>The research is important as it tries to add some information and bridge the existing information gaps. However, there are a number of raised issues that need to be addressed. The suggestion if addressed would help to make the manuscript scientifically sound and more robust. The comments are doable and hope that most of the data is readily available or can be easily collected. English language usage need to be revised. Below are the detailed concerns raised:</p> <p>Title</p> <ol style="list-style-type: none"> 1) Title may need to be revised to agree with the problem statement or justification. <p>Introduction</p> <ol style="list-style-type: none"> 1) There is no clear or good cohesion between the paragraphs. The authors need to revise them. I.e. sentence of coriander in paragraph one from line 5 to 8 should be moved to paragraph four. Also under discussion section, paragraph one is more of literature review and should be brought under introduction section paragraph four. Similarly paragraph one under conclusion section, should either be deleted or brought to paragraph 4 under introduction section. 2) In paragraph 1, the mention of lead contamination in soil and being toxic sounds like just a speculation. In order to avoid this it is important for the data on the levels of lead contamination in soil i.e. literature values to be provided or included. 3) In paragraph two, it is mentioned that there are two approaches for phytoremediation. The first one has been given but the second one is 	



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	<p>not given. Please mention the second one and possibly discuss briefly.</p> <p>4) The authors talk of engineering industrial technologies, what are they? It is better to briefly describe them and possibly give examples and how much amounts of Pd or decontamination rate is achieved by them. The data can help to compare how much better can the current proposed Pb bioaccumulator (coriander) from soil be than the current available technologies.</p> <p>5) It has been pointed out that that there are natural hyper accumulator plants, what are they briefly and give examples? It is important and much better to give how much amounts or levels of Pb are being immobilized and bioaccumulated by such plants from soil. This would also help to compare between coriander (i.e. how better or what potential it has as a Pb bioaccumulator?) and the already existing ones.</p> <p>6) The introduction or background information does not flow or agree well with the objective of the research in the last paragraph under introduction section. The introduction can either be rewritten to suit the study objective or rewriting the objective to match well with the background information (i.e. objective is looking at effect of Pb on coriander plant yet the background is about effect of coriander on removal of Pb from the soil as a potential Pb bioaccumulator plant for phytoremediation).</p> <p>Materials and methods</p> <p>1) The information or data about pH of compost, nutritional or elemental (N, P, K, S etc.) composition of the compost manure and what type of compost used have not been provided. This important information should be provided and it would help in the interpretation of the results. For example compost from animal wastes contains a lot of phosphates, sulphates and etc. unlike composts from plants and these have a critical role on the solubility of Pb.</p> <p>2) The most important vital information on Pb has not been provided such as the form or source of Pb solutions i.e. is it, lead nitrates or</p>	
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	<p>sulphates etc.? How much moles of Pb were applied per pot or plant? What was the pH of Pb solutions? What about the pH of the nutrient media at each interval of water application or at the end of experiment? The information is needed especially to help in the interpretation of the results.</p> <p>3) The dimensions of the pots given are diameters but height or depth has not been given. Please provide this information. It can help to know how much volume of compost was used in terms of nutrition. Also if somebody may want to replicate the same experiment.</p> <p>Results</p> <p>1) There is a need to provide data on the levels or amounts of Pb accumulated by the coriander plants at the end of the experiments. Also the data on nutrient media pH at each water application regime or at the end of 40 days experiment should be provided. These sets of data are very important in knowing if Pb was soluble, absorbed by the coriander and also to prove whether indeed Pb was incorporated/assimilated in coriander or not; otherwise the results are meaningless or useless in terms of Pb bioaccumulation by coriander.</p> <p>2) The interpretation of the results that it was due to the effect of Pb toxicity is not really true. In fact the reality is that Pb was dormant or inactive due to likely precipitation that occurred. This is because of the following reasons:</p> <ol style="list-style-type: none"> In most cases application of compost manure normally raises the pH of the aqueous solution to above 8.0, i.e. distilled water. This makes Pb insoluble. Use of compost manure i.e. animal normally contains carbonates, sulphates etc. and usually at such an aqueous pH of above 8.0 Pb can only be soluble when the concentration is less or about $15 \mu\text{g L}^{-1}$ (15 ppb). In this case of experiment high concentration of Pb from 500 to 3000 mg L^{-1} were used. It is most likely that most of the applied Pb precipitated due to carbonates, hydroxides, sulphates, phosphates contained in manure and silicates from sand. 	
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	<p>III. Under high pH it is likely that lead precipitated and formed lead hydroxycarbonates, lead carbonates, lead sulphides (PbS), lead phosphates, lead silicates and etc. which are more insoluble. In other words most applied Pb was insoluble, not active and did not directly have an effect on coriander's physiological development.</p> <p>IV. The other critical point is that lead reacted with most vital basic or primary elements for plant growth such as phosphates and sulphates to form lead phosphates and lead sulphides (PbS) respectively and we know that P and S are important elements in physiological development of plants. For example S is an important element that plays a major role in leaf development especially in chlorophyll development while P is important in the role of enzymes in plants and also as a catalyst in different plant metabolism activities. Now if Pb formed $Pb_3(PO_4)_2$ and PbS, it is likely that most P and S were not available and so plants were deficient of P and S. The absent or deficiency of S could be the one that directly affected the colour development negatively in coriander. In other words the results obtained in this experiment were due to nutritional problems such as P and S deficiency and not necessarily due to effect of Pb poisoning as it is being speculated in the results. If data of Pb bioaccumulation in the coriander can be provided then possibly it can justify the current claims.</p> <p>Discussion</p> <ol style="list-style-type: none"> 1) Paragraph 1 is more of a literature review therefore it should be moved to introduction section. 2) The discussion can make sense if the data above is available otherwise the explanation could be due to other factors other than direct effect of Pb. <p>Conclusion</p> <ol style="list-style-type: none"> 1) Paragraph 1 should be deleted or be moved to introduction section. 2) The conclusion should be revised to clearly answer the objective of the study. 	
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<u>Minor</u> REVISION comments		
<u>Optional/General</u> comments		

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