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In this work, authors have carried out a study on bioremediation of engine-oil contaminated soil using local residual organic matter. The study design considered four treatments notably; ramial chipped wood (RCW), horse manure (MANR), brewers 'spent grain (BSG), and inorganic fertilizer (FERT). Authors sufficiently used many analytical parameters to support the study. This manuscript would be recommended for publication, however, I would recommend some minor corrections prior to acceptance.

## **Comments**

### **Abstract**

(1) L21 – 22, authors should consider using either “framework of circular economy” or “circular economy’s framework”

### **Introduction**

(2) In L57 – 58, some of the citations used by authors are way too old and not recent enough to warrant a novel study.

(3) Authors are invited to consider the following recommendations wherein strength of locally generated fertilizing materials has been recently demonstrated.

Onwosi et al., 2018

Onwosi, C.O., Nwankwegu, A.S., Enebechi, C.K., Odimba, J.N., Nwuche, C.O., Igbokwe, V.C., 2018. Bioremediation of Soil Contaminated with Diesel Using Inorganic Nitrogen Sources: Incorporating *n*th-Order Algorithm in the Evaluation of Process Kinetics. *Soil and sediment contamination*. 1 – 9. <https://doi.org/10.1080/15320383.2018.1423023>.

Onwosi et al., 2017

Onwosi, C.O., Odibo, F.J.C., Enebechi, C.K., Nwankwegu, A.S., Ikele, A.I., Okeh, O.C. 2017. Bioremediation of diesel-contaminated soil by composting with locally generated bulking agents. *Soil and Sediment Contamination*. 26(4), 438–456.

Nwankwegu et al., 2016a

Nwankwegu, A.S., Onwosi, C.O., Orji, M.U., Anaukwu, C.G., Okafor, U.C., Azi, F., Martins, P.E., 2016a. Reclamation of DPK hydrocarbon polluted agricultural soil using a selected bulking agent. *J Environ Manag*. 172, 136 – 142.

(4) L62. Circular economy’s framework. Revise.

(5) L82 – 84 essentially needs citation (s). The following or another would be appropriate;

Nwankwegu et al., 2016b

Nwankwegu, A.S., Orji, M.U., Onwosi, C.O., 2016b. Studies on organic and in-organic biostimulants in bioremediation of diesel-contaminated arable soil. *Chemosphere*.162, 148 – 156.

Nwankwegu et al., 2017

Nwankwegu, A.S., Onwosi, C.O., Azi, F., Azumini, P., Anaukwu, C.G., 2017. Use of rice husk as bulking agent in bioremediation of automobile gas oil impinged agricultural soil. *Soil Sediment Contam.* 26, 96 – 114.

(6) Consider removing Hattab et al., 2015 in L108 its appearance in L107 is already an ideal. This should be effected where applicable in the entire manuscript.

(7) In L116, authors should replace the verb “has” with have.

(8) The citation “Abioye (2011) as it appeared in L119 should be revised.

(9) L127 – 128, what are those legal regulations? A mention of two or more would sufficiently increase the strength of assertion.

(10) Authors considered more than one treatments in the study so the word “between” as used in L138 should be replaced with “among”

## **Materials and methods**

(11) In L156 according to authors ‘explanation, are they part of the RFM not locally sourced?

(12) In L236, it is not clear if the authors stated how the protocol is done rather than what was done in the present study. Saying “extraction is done” is like stating a general procedure instead of what was done.

(13) L249 – 250, it is noteworthy for attention why the authors chose the use of old citations, whereas more recent studies which discussed the similar approach abound. For example;

Nwankwegu and Onwosi, 2017

Nwankwegu, A.S., Onwosi, C.O., 2017. Bioremediation of gasoline contaminated agricultural soil by bioaugmentation. *Environ. Technol. Innovat.* 7, 1 – 11.

(14) In the whole methodology, it is clear that authors did not monitor the pH fluctuations in the different amendments. Studies have shown that no bioremediation approach is 100% efficient because of different metabolite that maybe produced as bioremediation event lasts. It is also demonstrated that pH in different microcosms under this condition is usually the function of dominant metabolite arising from the amendments. It is actually surprising that the pH of the inorganic fertilizer amended options did not significantly decrease relative to the organic material amended systems but remained stable throughout the incubation. Technically, one may wish to know why? For examples; Orji et al., 2012 (*Malaysian Journal of Microbiology*), Nwnakwegu et al., 2018 (*Environmental Technology*), Nwankwegu et al., 2016 (*Chemosphere*), etc. have attributed substantial contribution to pH dynamics. The pH is therefore as important as temperature and other physicochemical parameters. This could be the first report of pH stability under different treatments.

(16) What do the authors mean by the acronym PCN in L299? Is it similar to PHC as previously used in the previous sections? If yes then it is crucial to maintain consistency in the acronyms if no then initial definition would be more compelling.

(17) In L300, authors may not necessary introduce citations in the result section since it is separated from the discussion and not results and discussion. If this is a statement that needs to be backed by citations then I suggest you lift them to the discussion section.

(18) The word “hovering” in L319 needs to be revised. Consider “was within the commercial & Industrial sites’ regulatory guideline (3500 mg kg<sup>-1</sup>) instead of hovering. The personification is way too animate.

(19) In L328, replace “between” with “among”

(20) In L338, initial definition of AWCD is important prior to subsequent acronym. AWCD could mean Average Well Color Development.

(21) It is further more surprising that considering what happened from L338 – L351, pH stability was reported. I would therefore challenge the authors to show previous reports of pH stability under similar scenarios. If not I kindly request authors to revise and include pH dynamics as it certainly would affect microbial amensalism and bioremediation efficiency.

### **Discussion**

(22) The study did not consider metabolomics evaluation of PHC degradation hence the statement in L356 –L357 lacks authority

(23) Consider revising this word “hovering” in L415

(24) L422 –L427, what kind of citation is this e.g. Agamuthu et al. (2010)et al. 423 (2010)?

(25) L432 – L433, statement not clear. Revise

(26) Consider changing least amount of time to shortest time in L438.

(27) What do the authors actually mean by the use of the acronym PCH in L441 without initial definition?

(28) L450 – L451, what about cost?

### **Conclusion**

(29) L465, consider changing the infinitive” to source” to “to sourcing”

Generally, the whole work especially the conclusion showed great strength but I sincerely recommend more recent citations. This would do pretty much work on the overall strength and novelty.