Review Form 3

Journal Name:	**Asian Journal of Environment & Ecology**
Manuscript Number:	**Ms_AJEE_125838**
Title of the Manuscript:	**Study on the effectiveness of livestock wastewater treatment using chemical coagulation method**
Type of the Article	**Research Articles**

General guidelines for the 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

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 study addresses an important environmental issue, particularly wastewater treatment by investigating the effectiveness of different chemical coagulants. Nevertheless, the manuscript contributes by focusing on livestock wastewater which less frequently studied compared to industrial wastewater. The comparative analysis of three coagulants and the identification of PAC as the most effective option is a valuable addition.**	
Is the title of the article suitable? (If not please suggest an alternative title)	**The title could be more specific and engaging. It should benefit from emphasizing the key findings or comparative nature of the study. "Comparative Study on the Effectiveness of Poly Aluminium Chloride (PAC), Aluminium Sulfate, and Iron Sulfate in Livestock Wastewater Treatment"**	
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 should include details about the methodology and the broader implications of the results. • Streamline the results section in the abstract by emphasizing only the most significant data.**	
Are subsections and structure of the manuscript appropriate?	**Yes**	
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.	**The manuscript adheres to proper experimental design principles, including the testing of different dosages and the use of well-established analytical methods, ensuring reliable and reproducible results. This study follows a well-structured experimental methodology, employing standard chemical coagulation techniques with multiple coagulants (PAC, Aluminum Sulfate, and Iron Sulfate) which allowing for a comprehensive comparison of their effectiveness in livestock wastewater treatment. The study uses key water quality indicators such as COD, BOD_5, and TSS, which are widely recognized parameters for assessing wastewater treatment efficiency.**	
Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form. -	**Update the references to include more recent studies (2022 onwards)**	

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Minor REVISION comments **Is the language/English quality of the article suitable for scholarly communications?**	Acceptable	
Optional/General comments	- This study addresses an important environmental issue, particularly wastewater treatment by investigating the effectiveness of different chemical coagulants. The topic is relevant. Nevertheless, the manuscript contributes by focusing on livestock wastewater which less frequently studied compared to industrial wastewater. The comparative analysis of three coagulants and the identification of PAC as the most effective option is a valuable addition. **Title** The title could be more specific and engaging. It should benefit from emphasizing the key findings or comparative nature of the study. “Comparative Study on the Effectiveness of Poly Aluminium Chloride (PAC), Aluminium Sulfate, and Iron Sulfate in Livestock Wastewater Treatment” **Abstract** • The abstract should include details about the methodology and the broader implications of the results. • Streamline the results section in the abstract by emphasizing only the most significant data. **Introduction** • The introduction could be strengthened by offering a more detailed background on previous research, especially related to coagulation methods used for livestock wastewater. • Lacks a clear gap in the literature as well as an explicit justification on why this study is needed. **Aim and Objectives** • The aim is clear. • The objectives do not mention how this study contributes to improve sustainability in agriculture or environmental protection. **Materials and Methods** • The section lacks a detailed description of the sampling method (how many sources were samples collected, under what conditions). • There is no discussion on why the software IRISSTAT 5.0 was chosen or how the results were validated. **Results & Discussion** • While the results are presented clearly, there is little interpretation or context given alongside the tables and figures. • The discussion should discuss on why increasing coagulant concentration could reduce efficiency. The potential environmental or health impacts of using such coagulants are not addressed. The discussion is limited to interpreting results without suggesting practical applications. • “Livestock wastewater contains a significant amount of organic and inorganic particulate matter [1] with small sizes, making it difficult to settle and separate through mechanical methods, which can be time-consuming [2].” Please specify the types of organic and inorganic matter typical for livestock wastewater. • “When coagulants are added to the wastewater, the positively charged particles will attract the negatively charged suspended particles present in the water [5].” Explain on how each coagulant differs in action. For example PAC works through polymerization by forming highly charged aluminium species that increase removal efficiency. • “The treatment of wastewater was conducted using PAC at varying amounts of 0.25g to 1.25g, resulting in a treatment efficiency increase from 53.76% to 76.32%, with the COD concentration after treatment decreasing from 1431.32 mg/L to 732.99 mg/L.” Include justification for the dosage range selected by referencing previous studies or industry standards. • “When the PAC dosage was increased to 1.5g (T6), the COD concentration after treatment rose to 768.283 mg/L, and the treatment efficiency decreased to 75.18%.” Please discuss the potential for overdosing leading to charge reversal or re-stabilization of colloids, and how this impacts flocculation negatively. • “The concentration or content of Chemical Oxygen Demand (COD) in livestock wastewater refers to the amount of oxygen required to	

	chemically oxidize organic and inorganic matter present in the water [8].” what type of organic materials contribute to these high COD levels? • “When the PAC dosage was increased to 1.5g, the COD concentration after treatment rose, and the treatment efficiency decreased compared to the 1.25g level. Sensory evaluation showed that increasing the PAC dosage to 1.5g resulted in slightly turbid water with more suspended solids.” There is no mention of why turbidity increased (likely due to re-flocculation or excess PAC causing particle destabilization). • “The highest treatment efficiency was achieved using PAC, with a reduction of 95.67%, resulting in a TSS concentration of 112.02 mg/L, which is lower than the 150 mg/L limit specified in QCVN 62-MT:2016/BTNMT.” Discuss how these findings might translate to real-world applications. Is PAC cost-effective for large-scale use, and are there environmental considerations for its use in agricultural settings? • Please improve the quality of Figure 1 to Figure 3! **Conclusions** • The conclusion effectively summarizes the key findings. • However, the conclusion misses an opportunity to stress the importance of achieving regulatory compliance and sustainability goals in agriculture. **References** • Update the references to include more recent studies (2022 onwards)	

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)*	

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