

**BERKAS KORESPONSENSI HASIL PENELITIAN/PEMIKIRAN YANG
DIPUBLIKASIKAN DALAM BENTUK JURNAL INTERNASIONAL
TERINDEKS PADA BASIS DATA INTERNASIONAL**

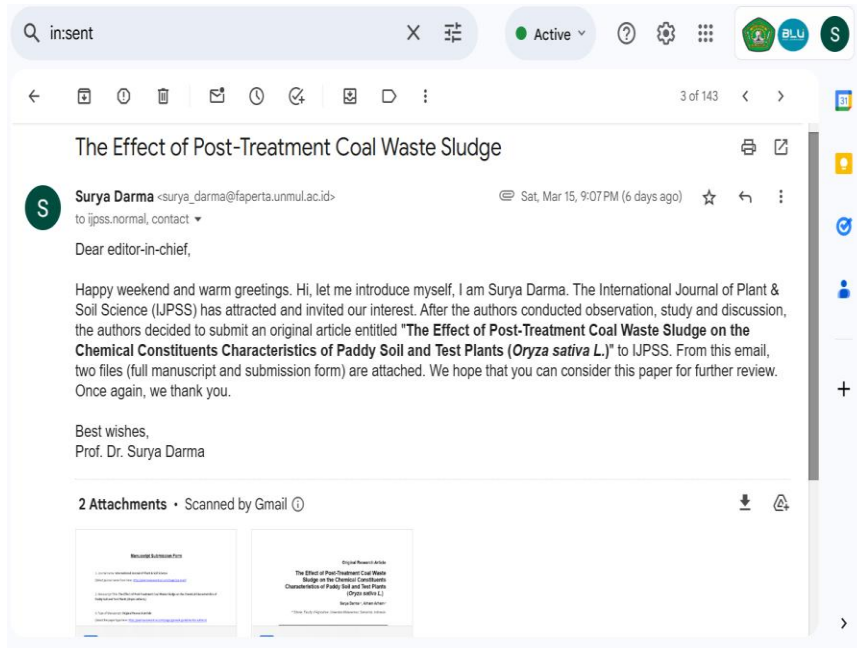
***) Status Terbitan**

Nama penulis	:	Surya Darma & Arham Arham
Penanggungjawab	:	Surya Darma
Judul artikel	:	The Impact of Treated Coal Waste Sludge on Paddy Soil Chemistry Rice Growth
Tahun terbit	:	2025
Volume, edisi & hal.	:	37(3), pp. 353–361
URL DOI	:	https://doi.org/10.9734/ijpss/2025/v37i35373
Nama jurnal	:	International Journal of Plant & Soil Science (IJPSS)
Penerbit	:	SCIENCEDOMAIN International
Lokasi penerbit	:	Hooghly, West Bengal, India
Website jurnal	:	http://www.journalijpss.com/index.php/IJPSS
ISSN	:	2320-7035
Index	:	Index Copernicus International (ICI)
URL index	:	https://journalijpss.com/index.php/IJPSS/abstracting-indexing
Proses/durasi terbit	:	±1 bulan

****) Kronologi Publikasi**

<i>Rangkaian</i>	<i>Waktu</i>	<i>Keterangan</i>
Tahap 1	15/03/2025	Pengiriman makalah
Tahap 2	17/03/2025	Tanggapan pengiriman makalah
Tahap 3	17/03/2025	Konfirmasi kepengarangan
Tahap 4	19/03/2025	Proses ulasan
Tahap 5	21/03/2025	Pengumuman hasil ulasan
Tahap 6	24/03/2025	Remainder hasil ulasan & jawaban penulis
Tahap 7	25/03/2025	Respon editor terhadap penundaan ulasan
Tahap 8	28/03/2025	Tindak lanjut proses ulasan
Tahap 9	29/03/2025	Penyerahan revisi makalah
Tahap 10	29/03/2025	Penerimaan makalah & pembayaran
Tahap 11	31/03/2025	Konfirmasi pembayaran
Tahap 12	31/03/2025	Penyuntingan akhir
Tahap 13	01/04/2025	Publikasi online

Tahap 1 - 15/03/2025: Pengiriman makalah



Tahap 2 - 17/03/2025: Tanggapan pengiriman makalah

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2025/IJPSS/133142 : The Effect of Post-Treatment Coal Waste Sludge on the Chemical Constituents Characteristics of Paddy Soil and Test Plants (Oryza sativa L.)

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Managing Editor Submission <submission@sciencedomain.org>
to me

Mon, Mar 17, 4:56 PM (4 days ago)

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2025/IJPSS/133142 : Acknowledgement of manuscript submission

Dear Dr. Surya Darma,

Thank you very much for submitting your valuable paper to our journal. We have started the editorial processing of the manuscript with the following details

Title: The Effect of Post-Treatment Coal Waste Sludge on the Chemical Constituents Characteristics of Paddy Soil and Test Plants (Oryza sativa L.)
Journal: [International Journal of Plant & Soil Science](#)
Manuscript Number: 2025/IJPSS/133142

We'll contact you very soon after getting peer review reports.

We are pleased to inform you that your paper will be published **with special discount** after peer review.

Original Journal Price: 500 US\$

Journal Price after discount: 65 US\$

Normal processing time schedule: Submission to Publication: 10-20 days (Approximately)

Manuscript withdrawal policy available here: <http://peerreviewcentral.com/page/manuscript-withdrawal-policy>

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Ms. Ruma Bag

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Tahap 3 - 17/03/2025: Konfirmasi kepengarangan

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Welcome to SCIEDOMAIN international

Managing Editor Submission <submission@sciencedomain.org> to me Mon, Mar 17, 4:57 PM (4 days ago)

Dear Dr. Surya Dharma,

Welcome to this journal. Thank you for submitting your valuable manuscript. I am Ms. Ruma Bag. I will be working as your 'Personal Editorial Manager (PEM)' during processing of your manuscript. If you face any problem during processing of this manuscript you are always welcome to contact me. I will be happy to help you.

Please send us your Mobile number & whatsapp number for better communication.

With Best Regards
Ms. Ruma Bag

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in: sent

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2 of 143

Surya Dharma <surya_darma@faperta.unmul.ac.id> to Managing Mon, Mar 17, 5:45 PM (4 days ago)

Dear Journal Editor (Ms. Ruma Bag),

Thank you for your positive response. Here is my WhatsApp number (+62 812-5477-240). You can contact me if there is any further information regarding the progress of the paper review. You can also provide information in this email.

Greetings,
Prof. Dr. Surya Dharma

Managing Editor Submission to me Mon, Mar 17, 7:21 PM (4 days ago)

Dear Dr. Surya Dharma,

Thank you for your mail and information. We have received your contact details for future communications.

Thank you for your interest in our journal.

With Best Regards
Ms. Ruma Bag
Journal Editorial Office
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Tahap 4 - 19/03/2025: Proses ulasan

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Minor review comments for manuscript number: 2025/IJPSS/133142

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Editor PRM 5 <sdi.5@sciencedomain.org>
to me

🗉 Wed, Mar 19, 9:46 PM (2 days ago)

☆

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Dear Dr. Surya Dharma,

We are contacting from [International Journal of Plant & Soil Science](#) regarding Manuscript Number. 2025/IJPSS/133142

Title of the Manuscript: **The Effect of Post-Treatment Coal Waste Sludge on the Chemical Constituents Characteristics of Paddy Soil and Test Plants (*Oryza sativa* L.)**

-

All Review Forms (02 nos) are attached with this email.

Deadline:

Authors are requested to send revised paper as soon as possible (within 5 days) to accelerate the pre-publication formalities. If we receive the revised version within this deadline, the paper can be published in the current issue of the journal within 5 days. If extra time is required, kindly inform us.

Guideline:

1. Comments of all the reviewers should be addressed during revision.
All the correction/revision should be done in the following file only
File name: [Original Manuscript_IJPSS_133142]
2. Authors should write their feedback in all the review forms in the space provided for 'author's comment' (Third Column of the Table).
3. **Please send us the revised manuscript and all filled review forms as E-mail attachment to this email only.**

-

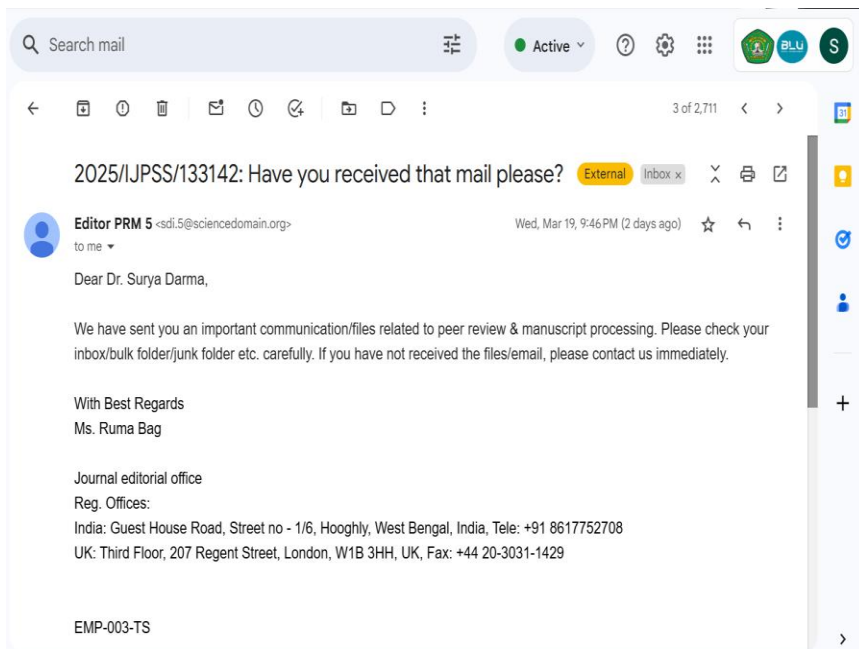
You are hereby requested to kindly acknowledge the receipt of this mail.

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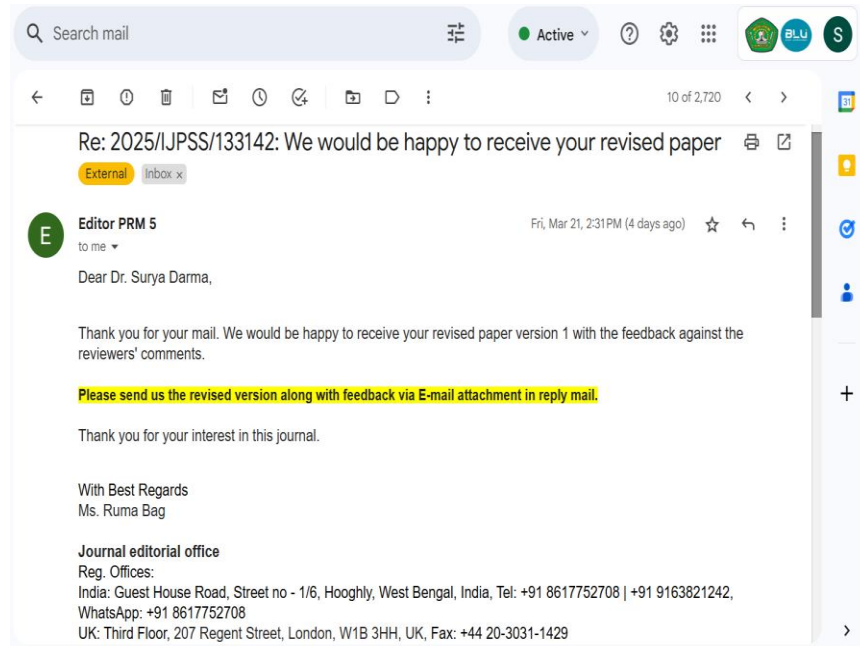
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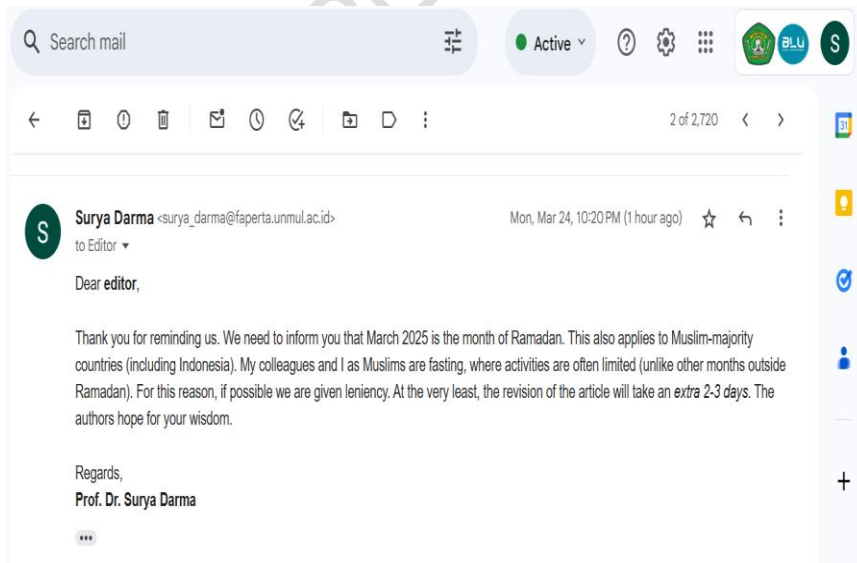
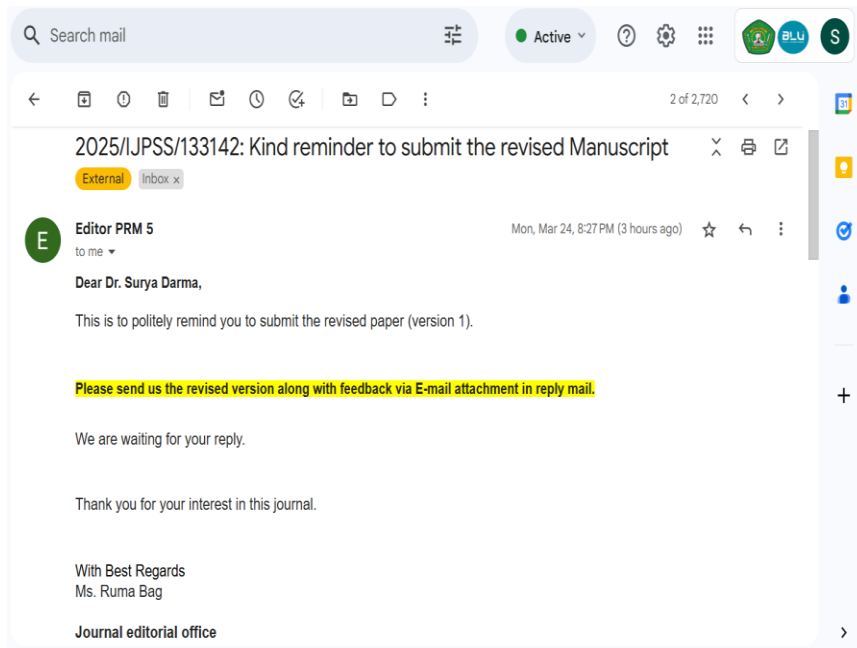
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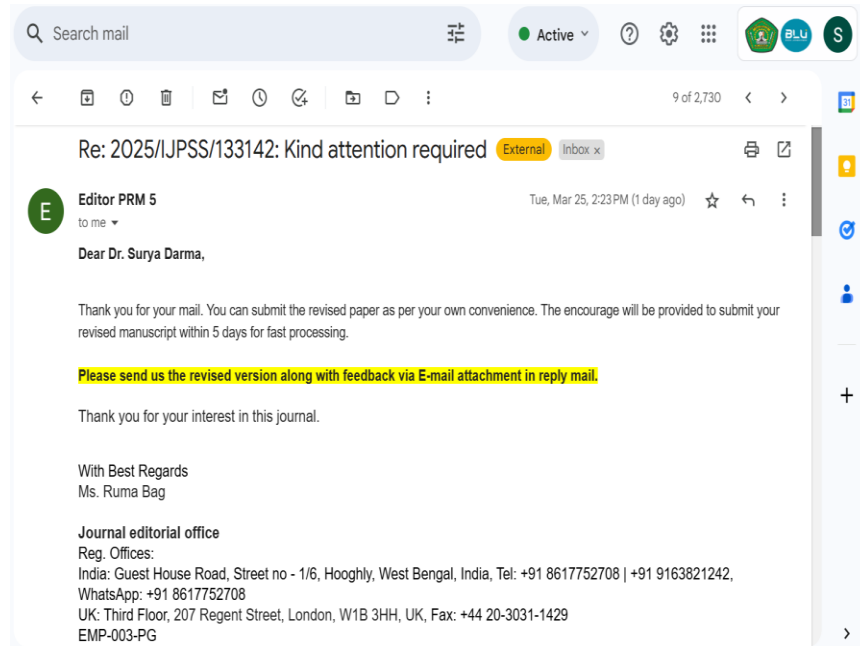
Tahap 5 - 21/03/2025: Pengumuman hasil ulasan



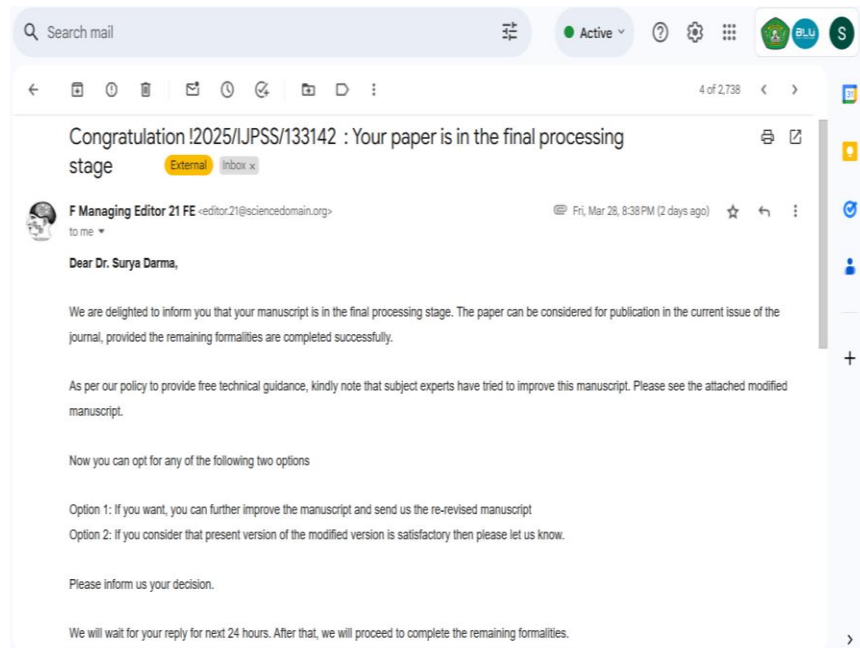
Tahap 6 - 24/03/2025: Remainder hasil ulasan & jawaban penulis



Tahap 7 - 25/03/2025: Respon editor terhadap penundaan ulasan



Tahap 8 - 28/03/2025: Tindak lanjut proses ulasan



Tahap 9 - 29/03/2025: Penyerahan revisi makalah & komentar reviewer

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S

Surya Dharma <surya_darma@faperta.unmul.ac.id>
to Editor

Sat, Mar 29, 6:13 PM (6 hours ago)

Dear editor,

Hi, sorry for just replying to your message. Once again, we thank you for your patience. The authors have made some corrections to improve the quality of the manuscript. Basically, we agree with all the suggestions and comments highlighted by both reviewers. Two files are attached (*review response form* and *revised manuscript*). You can review all the corrected points. Looking forward to hearing from you.

Best wishes,
Prof. Dr. Surya Dharma

3 Attachments • Scanned by Gmail

Rev_IJPSS_13314...

Rev_IJPSS_13314...

Original Manuscri...

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Thank you for your mail and attachments :2025/IJPSS/133142

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F Managing Editor 21 FE <editor.21@sciencedomain.org>
to me

Sat, Mar 29, 7:46 PM (5 hours ago)

Dear Dr. Surya Dharma,

Thank you for your mail and attachments. We have sent the revised paper version and your response of final evaluation comments to the Editorial Board Member for final decision. We are waiting for his reply.

With Best Regards
Ms. Ruma Bag

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India: Guest House Road, Street no - 1/6, Hooghly, West Bengal, India, Tel: +91 8617752708 | +91 9163821242, WhatsApp: +91 8617752708
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Tahap 10 - 29/03/2025: Penerimaan makalah & pembayaran

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Final Decision for Manuscript Number: 2025/IJPSS/133142

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Managing Editor <sdi.2@sciencedomain.info>
to me

Sat, Mar 29, 8:45 PM (4 hours ago)

Dear Dr. Surya Dharma,

We are delighted to inform you that the Editor of this journal has accepted your following paper for publication.

Manuscript number: 2025/IJPSS/133142

Title: The Impact of Treated Coal Waste Sludge on Paddy Soil Chemistry Rice Growth

Journal name: [International Journal of Plant & Soil Science](#)

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2. sdi.2@sciencedomain.uk

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One line acknowledgement will be highly appreciated. Should you need any assistance please do not hesitate to contact us. We'll be happy to help you.

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Ms. Ruma Bag



International Journal of Plant & Soil Science

\$65.00

Journal Price (Regular)

Black & White Journal

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Select an option


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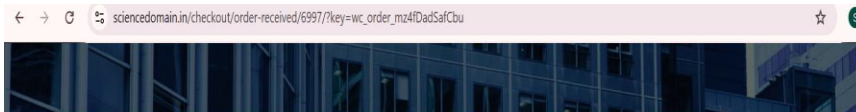
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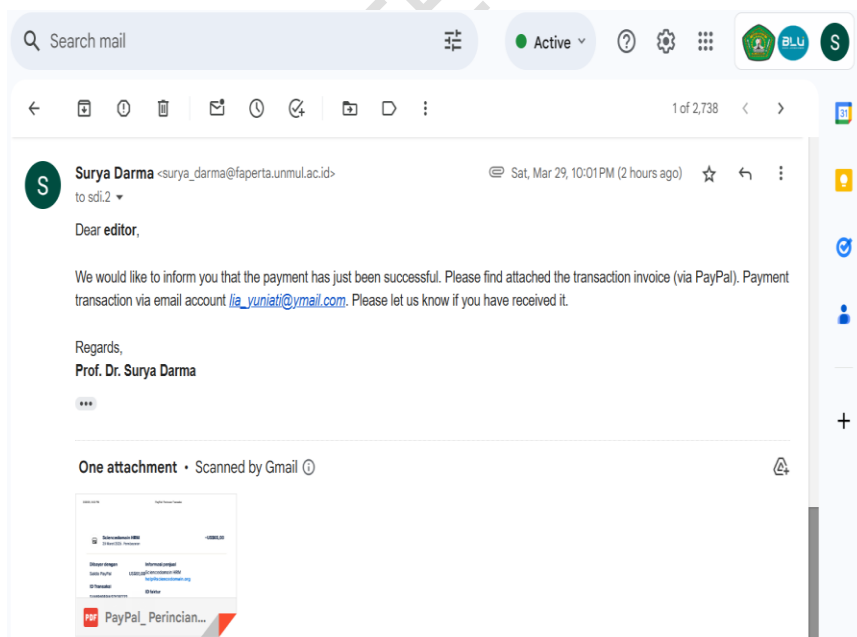


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Tahap 11 - 31/03/2025: Konfirmasi pembayaran

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Re: 2025/IJPSS/133142 - Acknowledgement for the receipt of Journal price

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S

Managing Editor

to me, lia_yuniati, editoraccounts2

Mar 31, 2025, 3:07 PM (2 days ago)

☆ ↶ ⋮

Dear Dr. Surya Dharma,

Thank you for your mail and attachments. We acknowledge the receipt of the Journal price for your accepted paper (Manuscript number: 2025/IJPSS/133142). Soon we will proceed with publication of the paper.

Thank you for submitting your paper to this journal.

With Best Regards
Ms. Ruma Bag

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Tahap 12 - 31/03/2025: Penyuntingan akhir

The image shows two screenshots of an email interface. The top screenshot displays an email titled "Galley Proof for manuscript number 2025/IJPSS/133142" received on March 31, 2025, at 5:59 PM. The email is from "G Managing Editor Galley Proof 4" and is addressed to "me". The content of the email includes a greeting to Dr. Surya Dharma, a request to check the attached galley proof PDF within 48 hours, and a note that the author is eligible for one free revision. The bottom screenshot shows another email from the same sender, titled "Important communication for manuscript number: 2025/IJPSS/133142", received on March 31, 2025, at 6:00 PM. This email informs the recipient that an important communication related to the proof reading has been sent to their inbox/bulk folder/junk folder and asks them to check it carefully. It also provides contact information for the Journal editorial office.

Galley Proof for manuscript number 2025/IJPSS/133142 External Inbox x

G Managing Editor Galley Proof 4 <publication.4@sciencedomain.org> Mar 31, 2025, 5:59 PM (2 days ago)

to me

Dear Dr. Surya Dharma,

We are contacting with you on urgent basis regarding your manuscript no. 2025/IJPSS/133142

Please find attached the ready-to-be published .pdf version of your paper. Kindly check it and confirm us within 48hrs. If we don't get any reply from you within next 48hrs, we'll assume that you require no correction further. We'll consider this version as final one.

This mail has been sent from the following 2 emails to avoid email failure delivery:

1. publication.4@sciencedomain.org
2. sdg.galleyproof@yahoo.com

Note: Author(s) are eligible for only one free revision of the galley proof. Author(s) are kindly requested to complete all the corrections during the first revision of the galley proof. After first revision of the galley proof any other revision will attract additional charge.

Galley Proof for manuscript number

Dear Dr.,

We are contacting with you on urgent basis regarding your manuscript no.

Important communication for manuscript number: 2025/IJPSS/133142 External Inbox x

G Managing Editor Galley Proof 4 <publication.4@sciencedomain.org> Mon, Mar 31, 6:00 PM (2 days ago)

to me

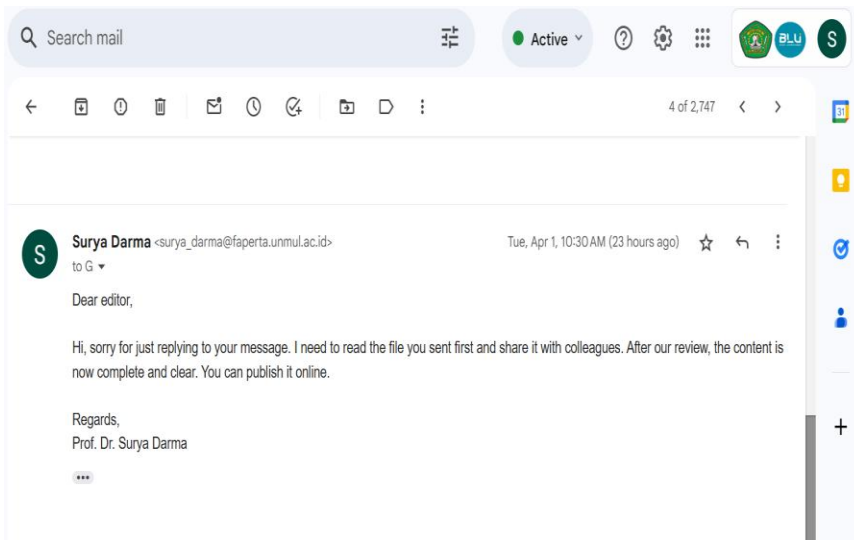
Dear Dr. Surya Dharma,

We have sent you an important communication/files related to proof reading of your paper. Please check your inbox/bulk folder/junk folder etc. carefully. If you have not received the files/email, please contact us immediately.

Subject line of the email is "Galley Proof for manuscript number 2025/IJPSS/133142"

With Best Regards
Ms. Ruma Bag

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UNDER PEER REVIEW

Tahap 13 - 01/04/2025: Publikasi online

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Final version published online - manuscript no. 2025/IJPSS/133142

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Editor SDI <publication.6@sciencedomain.biz>

Tue, Apr 1, 9:32 PM (12 hours ago)

to me

Dear Dr. Surya Darma,

1. We are pleased to inform you that the final version of your manuscript with full bibliographic details is now available online at:

<https://doi.org/10.9734/ijpss/2025/v37/35373>

2. We are also interested to know your publication experience (peer review standard, technical support, responsiveness, etc). Kindly don't hesitate to write if your experience is negative. Your feedback (positive/negative) will be instrumental for the development of this journal. We request also your kind permission to show your comments in our "Authors Speak" webpage, where other esteemed authors shared their experience (Link: <https://www.trustpilot.com/review/journalijpss.com>). From 06-04-2016, we have provided direct comment posting feature at the end of this page. Authors, who want to share their experience directly, can use this feature. Please include the web-link of your paper (<https://doi.org/10.9734/ijpss/2025/v37/35373>) at the end of your comment, to validate your authorship.

Thank you for your interest in this Journal.

With Best Regards
Ms. Ruma Bag

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International Journal of Plant & Soil Science

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Home / Archives / 2025 - Volume 37 [Issue 3] / Original Research Article

Full Article - PDF

Review History

Discussion

Published: 2025-04-01

DOI: 10.9734/ijpss/2025/v37/35373

Page: 353-361

Issue: 2025 - Volume 37 [Issue 3]

99 ? Total citations

49 ? Recent citations

The Impact of Treated Coal Waste Sludge on Paddy Soil Chemistry Rice Growth

Surya Darma ✉
Faculty of Agriculture, Universitas Mulawarman, Samarinda, Indonesia.

Arham Arham
Faculty of Agriculture, Universitas Mulawarman, Samarinda, Indonesia.

*Author to whom correspondence should be addressed.

Abstract

Mud from the coal washing pond, treated with lime, has spilled multiple times, resulting in pollution of the rice fields and sparking conflicts between local farmers and coal miners. The focus of this study was to determine the chemical properties of paddy field soil mixed with mud, chicken manure compost, and its effect on rice plants. The research was conducted in a greenhouse using a complete random design with a 3x4 factorial and three replications. Rice was

***) **Index Jurnal**

International Journal of Plant & Soil Science



English title: International Journal of Plant & Soil Science

ISSN: 2320-7035 (online)

DOI: 10.9734/IJPSS

Website: <http://www.journalijpss.com/index.php/IJPSS>

Publisher: *n/d*

Country: IN

Language of publication: EN

Deposited publications: 4957 > Full text: 7% | Abstract: 100% | Keywords: 100% | References: 15%

[Issues and contents](#)

Journal description

Details

Scientific profile

Editorial office

Publisher

ISSN: 2320-7035 Journal DOI: <http://dx.doi.org/10.9734/ijpss> (Link) Peer-review model: Advanced OPEN peer review
NAAS Score: 5.07 (2024) (Proof: <https://naas.org.in/NIS/journals2024.pdf>) Digital Archiving: Journal Repository (JR).

Indexed in the ICI Journals Master List 2023

ICV 2023: 91.86

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MSHE points:

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Please contact with:

✉ The editorial office of the journal (Comments, Requests, Information)

 Index Copernicus (Submissions, Questions, Suggestions)

****) **Faktur Transaksi**

3/29/25, 9:52 PM

PayPal: Perincian Transaksi



Sciencedomain HRM
29 Maret 2025 . Pembayaran

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****) Letter of Acceptance



SD Publisher Group

Publisher of peer reviewed international journals, books and monographs

Letter No. ACCIJPSS133142SUR

Date: 28-03-2025

Subject: Acceptance Letter for (Manuscript Number: 2025/IJPSS/133142) submitted in International Journal of Plant & Soil Science

Dear Colleague,

We are pleased to inform you that the peer review process and editorial review process have been completed for your following manuscript.

Manuscript Number: 2025/IJPSS/133142

Title: The Impact of Treated Coal Waste Sludge on Paddy Soil Chemistry Rice Growth

Author(s): Surya Darma, Arham Arham

We are ready with the final decision. We are happy to inform you that your manuscript is officially accepted for publication in the **International Journal of Plant & Soil Science**. This journal is Peer Reviewed and Referred journal.

Once your manuscript is moved to publishing, our production editor will keep you informed of your article's progress in the production process. You will also receive a galley proof of your manuscript for final review. We're excited to move forward with your submission. Please feel free to email me with any questions.

Thanking you.

Dr. M. B. Mondal

Chief Managing Editor

Validation Link:

<https://dashboard.peerreviewcentral.com>

Username: surya_darma@faperta.unmul.ac.id

Password: fnJanyZyCCF0

Please use your login and password to check the authenticity.



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W1B 3HH, UK



*****) Komentar Pengulas

Review Form 1

Journal Name:	International Journal of Plant & Soil Science
Manuscript Number:	Ms. IJPSS_133142
Title of the Manuscript:	The Effect of Post-Treatment Coal Waste Sludge on the Chemical Constituents Characteristics of Paddy Soil and Test Plants (Oryza sativa L.)
Type of the Article	Original Research Article

PART 1: Comments

	<p>Reviewer's comment</p> <p>Artificial Intelligence (AI) generated or assisted review comments are strictly prohibited during peer review.</p>	<p>Author's Feedback (<i>Please correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here</i>)</p>
<p>Please write a few sentences regarding the importance of this manuscript for the scientific community. A minimum of 3-4 sentences may be required for this part.</p>	<p>This manuscript is particularly important for the scientific community as it examines the effects of treated coal waste sludge on soil chemical properties and rice plant growth. The results show that adding sludge, in combination with chicken manure compost, reduces soil acidity and improves the availability of essential nutrients such as nitrogen, phosphorus, and potassium. This finding is especially useful for sustainable agriculture, as it highlights an alternative way to utilize coal waste by turning it into a beneficial soil amendment. Furthermore, the study's findings can contribute to the management of agricultural soils in areas affected by coal mining, offering a practical solution for soil restoration and improved crop production.</p>	<p>Dear reviewer. The authors thank you for your dedication and time to review this paper.</p>
<p>Is the title of the article suitable? (If not please suggest an alternative title)</p>	<p>The current title, "The Effect of Post-Treatment Coal Waste Sludge on the Chemical Constituents Characteristics of Paddy Soil and Test Plants (Oryza sativa L.)", is informative but could be more concise. Suggested Alternative Titles:</p> <ol style="list-style-type: none"> 1. "Impact of Treated Coal Waste Sludge on Paddy Soil Chemistry and Rice Growth" 	<p>Thank you for your attention. We agree with the suggested alternative titles, of which we chose the first title. The first title is more suitable to describe the current content of the paper.</p>

<p>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.</p>	<p>2. "Soil Fertility and Rice Growth Improvement Using Treated Coal Waste Sludge"</p> <p>The abstract of the article provides a clear overview of the study, outlining its purpose, methodology, key findings, and conclusions. However, it could be improved for greater clarity and completeness. The research objective should be stated more explicitly, highlighting the significance of the findings for sustainable agriculture and coal waste management. Additionally, some sentences are overly long and complex, reducing readability. A simpler and more direct formulation would make the text more understandable.</p> <p>Although the results indicate that treated coal waste sludge can improve soil properties, the abstract does not sufficiently emphasize how these findings differ from previous studies or how they challenge the negative perceptions of local farmers. Furthermore, mentioning statistical significance (e.g., through ANOVA results) could enhance the scientific accuracy of the abstract.</p>	<p>The abstract was corrected to explicitly describe the background (problem phenomenon), objectives, methodology, main results, and implications. The latest version of the abstract now includes other findings that have not yet been disclosed. The authors also improved the statement of research objectives in the abstract.</p>
<p>Is the manuscript scientifically correct? Please write here.</p>	<p>The manuscript appears to be scientifically sound, as it follows a structured research methodology, including experimental design, statistical analysis, and interpretation of results. The study employs a well-defined factorial experimental design, with appropriate controls and replications, ensuring the reliability of the findings. The chemical analysis of soil properties and plant growth parameters aligns with established scientific procedures, and the results are presented systematically with supporting data.</p>	<p>We appreciate your concern.</p>
<p>Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form.</p>	<p>The manuscript includes a substantial number of references, covering relevant studies on soil chemistry, coal waste management, and rice cultivation. Many of the sources cited are from reputable journals, ensuring the credibility of the research. Additionally, the references span a wide timeframe, with several recent studies from 2021 to</p>	<p>Thank you. Authors are very particular about references. Every piece of literature cited is relevant and contextualized with the thematic highlights.</p>

	2024, indicating an effort to incorporate up-to-date research.	
Is the language/English quality of the article suitable for scholarly communications?	<p>The language of the article is generally suitable for scientific communication, but there are areas that could be improved to make the text clearer and more readable. While the content is conveyed correctly, some sentences are excessively long and complex, making comprehension more difficult. A more straightforward and direct phrasing, along with better transitions between ideas, would help improve the flow of the text.</p> <p>Additionally, there are minor grammatical errors, awkward phrasing, and inconsistencies in terminology. A careful revision, ideally by someone with academic experience in English, would enhance the accuracy and coherence of the manuscript. Strengthening the scientific tone with more precise wording and avoiding unnecessary repetition would make the article more professional.</p> <p>Overall, the article is understandable and scientifically well-founded, but thorough language editing would make it more suitable for publication in a scientific journal.</p>	<p>We pay close attention to these responses. To make the content of the text more scientifically understandable, the authors have refined it and made it more relevant. We use proofreading services with Language tools (<i>i.e.</i> Grammarly) to improve the readability of sentences and word phrases to make them easier to read. This includes editing some long and complex sentences for better understanding.</p>
Optional/General comments	-	

PART 2:

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

Review Form 2

Journal Name:	International Journal of Plant & Soil Science
Manuscript Number:	Ms_IJPSS_133142
Title of the Manuscript:	The Effect of Post-Treatment Coal Waste Sludge on the Chemical Constituents Characteristics of Paddy Soil and Test Plants (<i>Oryza sativa</i> L.)
Type of the Article	Original Research Article

PART 1: Comments

	Reviewer's comment Artificial Intelligence (AI) generated or assisted review comments are strictly prohibited during peer review.	Author's Feedback (<i>Please correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here</i>)
Please write a few sentences regarding the importance of this manuscript for the scientific community. A minimum of 3-4 sentences may be required for this part.	This manuscript provides valuable insights into the impact of treated coal sludge on paddy soil and rice plants. It highlights the effects of combining treated sludge and poultry manure compost on soil chemical properties and rice growth. These findings are relevant to agronomy researchers, soil management professionals, and policymakers seeking to optimize industrial waste utilization while improving agricultural productivity.	Basically, we welcome all reviewers' suggestions and concerns.
Is the title of the article suitable? (If not please suggest an alternative title)	The title is relevant and accurately reflects the manuscript's content. However, a more concise version could be: "Impact of Treated Coal Sludge on Soil Chemical Properties and Rice Growth (<i>Oryza sativa</i> L.)".	Referring to the two title change options offered by previous reviewers, we changed it to "The Impact of Treated Coal Waste Sludge on Paddy Soil Chemistry Rice Growth". This title was chosen because it is more concise and accurately reflects the content of the manuscript. The latest version of the title is attached to the revised manuscript file.

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.	<p>The abstract is generally comprehensive, but some information could be refined for better clarity. It is recommended to include:</p> <ul style="list-style-type: none"> • A statement on the environmental significance of the study. • A more detailed result regarding the performance of different treatments. • A sentence on the practical implications of the findings. 	<p>Similar to the previous reviewer's comments, there are improvements to the abstract. The authors improved the appearance of the abstract to make it more comprehensive. The three essential points included: (1) a statement of the environmental significance of the research, (2) more detailed results regarding the performance of the various treatments based on the analytical tools, and (3) practical implications of the findings.</p>
Is the manuscript scientifically correct? Please write here.	<p>The manuscript is scientifically sound, well-structured, and based on a robust methodology. However, the following points need clarification:</p> <ul style="list-style-type: none"> • Justification for the chosen doses of compost and sludge. • Details on the statistical analyses used. • Potential long-term impact of these treatments on soil fertility. 	<p>Thank you for your attention. Basically, we have highlighted the structure of the discussion. In response to your comments, the authors made scientific clarifications by including the novelty of the research (see at the end of the paper) and a revised abstract.</p>
Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form.	<p>The references are sufficient and well-chosen, but more recent sources on sludge use in agriculture could be included. It is suggested to incorporate studies published after 2021 on the effects of industrial waste on agricultural soils.</p>	<p>Two recent articles on the use of sewage sludge in agricultural soils are included in the paper (Khatana et al., 2023; Żukowska et al., 2023). You can see the updates in subchapter 3.3. Effect of Treatment on Generative Phase: last paragraph.</p>

Is the language/English quality of the article suitable for scholarly communications?	The text is generally well-written, but some grammatical and stylistic improvements are recommended to enhance fluency and readability.	We have made several improvements, including grammar and stylistics to improve fluency and readability. Software like Free AI Proofreader is specialized in correcting some unclear words.
<u>Optional/General comments</u>	Suggested Modifications <ul style="list-style-type: none"> • Rephrase some parts of the abstract for better clarity. • Clarify the justification for the applied doses. • Provide more details on the statistical analyses. • Improve the writing for better fluency and precision. • Add a few recent references on the topic. • “ (L.)” should not be italicized, whereas “<i>Oryza sativa</i>” should be. 	Similar to the reviewer's opinion, the abstract needs a comprehensive justification. The authors revised the abstract by explaining more details of the statistical analysis, including mentioning the dosage of compost fertilizer. In addition, some writing was corrected (in this case, symbols, punctuation, and abbreviations). Some references on the topics reviewed were added.

Editorial Comments (This section is reserved for the comments from journal editorial office and editors):

	Author's Feedback
<p>You are hereby suggested to include following recent references to improve the quality of the manuscript.</p> <p>Khatana RNS, Thomas T, Swaroop N, Barthwal A, Vinay. Effect of Incorporation of Sewage Sludge and Fly Ash on Soil Physico-Chemical Properties and Okra in Inceptisols of Prayagraj U.P. Int. J. Environ. Clim. Change. [Internet]. 2023 Mar. 11 [cited 2025 Mar. 17];13(4):111-7. Available from: https://journalijecc.com/index.php/IJECC/article/view/1717</p>	<p>Your suggestion to cite the literature of Khatana et al (2023) is implemented.</p>

PART 2:

	Reviewer's comment	Author's comment (if agreed with reviewer, correct the manuscript and highlight that part)

		<i>in the manuscript. It is mandatory that authors should write his/her feedback here)</i>
Are there ethical issues in this manuscript?	<i><u>(If yes, Kindly please write down the ethical issues here in details)</u></i>	

UNDER PEER REVIEW

Original Research Article

The ~~Effect Impact~~ of ~~Post-Treatment~~ Coal Waste Sludge on ~~the Chemical Constituents~~ Characteristics of Paddy Soil ~~Chemistry and~~ Test Plants ~~Rice Growth (Oryza sativa L.)~~

ABSTRACT

Mud from the coal washing pond, treated with lime, has spilled multiple times, resulting in pollution of the rice fields and sparking conflicts between local farmers and coal miners. The focus of this study was to determine the chemical properties of paddy field soil mixed with mud, chicken manure compost, and its effect on rice plants. The research was conducted in a greenhouse using a complete random design with a 3x4 factorial and three replications. Rice was planted in a bucket containing 10 kg of soil treated with water. This study using three levels of chicken manure compost (P), designated as P₀ (0_g), P₁ (50_g) and P₂ (100_g). The soil mixture was comprised of four levels of mud (L) and paddy field soil (S), designated as M₀ (0_kg L + 10_kg S), M₁ (2_kg L + 8_kg S), M₂ (4_kg L + 6_kg S), and M₃ (6_kg L + 4_kg S). Through a series of tests, it was found that this treatment had a positive impact on the chemical properties of paddy soil, with a notable decrease in soil acidity (pH of 5.2–to 6.2), an increase in total nitrogen (0.17% to –0.37%), and an enhancement in total phosphorus (P₂O₅) and potassium (K₂O) levels (24–to 55 ppm and 43.3–to 72.87 ppm, respectively). The control treatment (P₀M₀) exhibited a pH of 4.5, a total N of 0.16%, P₂O₅ and K₂O of 18.0 ppm and 41.50 ppm, respectively. During the generative phase, the application of sludge and compost separately resulted in a significant effect on plant height at 60 days after treatment (DAT). However, the interaction between the two treatments was not significant. The generative phase of P₁M₃ interaction exhibited the fastest flowering, with a duration of 53 days, which was 6 days faster than the control. The separate compost treatment exhibited a duration of 3 days, which was 3 days faster than the control. Also, the mud treatment did not yield significant results. Additionally, for panicle length, all treatments exhibited no significant differences. The weight of dry seed contents of panicles exhibited a significant difference between the interaction and the control. The highest yield of P₁M₃ was 5.33 g, while the control exhibited a yield of only 2.12 g. These results confirm that the treated coal waste sludge spill had no negative effect on paddy rice, on the contrary, it reduced the acidity of paddy soil at the optimum level of macro and micro nutrient availability. The addition of a 50 g compost dose and 1.5 times the weight of sludge to paddy soil significantly accelerated flowering in the best rice plants, P₁M₃, and increased yield by 2.5 times compared to the control group. These findings have changed farmers' perceptions regarding sludge spillage, which they previously viewed as a pollutant in their paddy fields.

Keywords: Coal waste; compost; nutrients; paddy rice; chemical properties; treatment.

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1. INTRODUCTION

The Teluk Dalam Village (L4) which located in Tenggara Seberang sub-district, Kutai Kartanegara Regency is an agricultural area (Jiuhardi et al., 2023). Since the 1980s, the majority of the population has been engaged in the cultivation of paddy rice (Sapar and Syafruddin, 2021). The total area of paddy fields is approximately 3,500 hectares (Darma et al., 2023). Since 2004, the majority of L4 has been subject to open-system coal mining (Harjanto et al., 2019). The process of coal mining has had a detrimental impact on the surrounding area, with several instances of mud spills from the coal waste neutralisation pond entering the nearest rice field area owned by residents (Fitryarini, 2018). This resulted in disputes between various parties. The relevant parties involved in the resolution of the issue include the police, the local community, environmental agencies, research organisations and universities.

The deposition of sludge on the surface of paddy soil is a challenging phenomenon to address, particularly when the soil is ploughed. The incorporation of the contaminated material into the paddy soil can extend to a depth equivalent to the ploughing layer. Such contamination can lead to the introduction of pollutants (Hong et al., 2022; Rusdianasari et al., 2013; Shin et al., 2017).

The objective of this research was to model the impact of coal sludge post-treatment on paddy soil, with the addition of chicken manure compost, on paddy rice plants. Chicken manure is the optimal organic fertiliser, exhibiting a complete nutrient profile comprising a high nitrogen content, sufficient phosphorus and potassium, and a range of micronutrients. The introduction of post-treatment sewage sludge must be balanced with the addition of organic matter to control and improve soil properties, *i.e.* physical, chemical, and biological (Mounika et al., 2021). The findings of this study aim to provide an explanation for the negative perceptions held by local rice farmers and other residents of L4 regarding the management of coal sludge waste in the area.

2. MATERIAL AND METHODS

The research was conducted from March to August 2024 at Universitas Mulawarman Greenhouse. The main materials used were coal washing sludge, chicken manure, paddy field soil and IR-64 rice seeds as test plants. The sludge, which had been neutralised with lime from coal mining activities adjacent to rice fields, was taken as the main ingredient of the planting media mixture. The 10 kg planting media mixture was placed in a bucket with water according to the needs and phase of the rice plant. The tools used are: hoes, machetes, sacks, scales, buckets, stationery, and a set of tools in the laboratory. Chemical properties of sludge samples, chicken manure compost, and treatment soil were analysed at the Soil Laboratory from Faculty of Agriculture - Universitas Mulawarman (e.g. Darma and Fahrunsyah, 2024).

The research was conducted in a greenhouse with a 3x4 factorial completely randomised design (CRD), with each treatment combination being repeated three times. The chicken manure was applied at three levels: P_0 (control) = 0g, P_1 = 50 g (5 tonnes per ha); P_2 = 100 g (10 tonnes per ha). The mixture of sludge (L) and paddy soil (S) was divided into four levels, with the control (M_0) comprising (0 kg L + 10 kg S), and the remaining levels (M_1 , M_2 , and M_3) comprising (2 kg L + 8 kg S, 4 kg L + 6 kg S, and 6 kg L + 4 kg S), respectively. The data were analysed using the analysis of variance (ANOVA) test, with any significant differences being followed by the least significant difference (LSD) test at the 5% level.

3. RESULTS AND DISCUSSION

3.1 Soil Chemical Properties

The application of coal waste sludge and chicken manure to paddy field soil resulted in an increase in soil reaction (pH), which occurred due to the materials used being close to neutral. The total P₂O₅ content of paddy field soil (Table 1) for the treatment combination of 240 to 551 ppm was moderate to high, while the control P₀M₀ was low at only 180 ppm. Neutralised coal waste sludge has a pH value of 6.3, while chicken manure has a pH of 5.8 (Table 2), both of which are slightly acidic. The addition of lime in coal washing water produces neutralised sludge (Herrera et al., 2007; Marwa and Sweya, 2024). The range of acidity in the combination treatment of sludge and paddy soil is pH of 5.2–6.2, with an acidic to slightly acidic status (Capuani et al., 2015; Park et al., 2020; Parkpian et al., 2003; Zhang et al., 2016). The lowest control, P₀M₀, has a pH of 4.5, while the highest is P₂M₃. Changes in soil acidity affect the availability of macro- and micro-nutrients. At high soil acidity with a pH value ≤ 4.5, the availability of plant-available phosphorus (P) is very low. Conversely, if the acidity decreases to pH of 5.5, the availability of P and other nutrients will increase and reach an optimal level in the pH range of 5.5–to 6.5 (Hartemink and Barrow, 2023).

Table 1. Analysis of chemical properties of treatment soils

Treatment	pH (H ₂ O)		N total (%)		P ₂ O ₅ (HCl 25%) <i>mg per 100g of paddy land</i>		K ₂ O (HCl 25%)	
	Score	Status*	Score	Status*	Score	Status*	Score	Status*
P ₀ M ₀	4.5	A	0.16	L	18	L	41.5	H
P ₀ M ₁	5.2	A	0.18	L	25	M	44.33	H
P ₀ M ₂	5.5	SA	0.2	L	30	M	44.57	H
P ₀ M ₃	5.8	SA	0.17	L	24	M	43.3	H
P ₁ M ₀	5.3	A	0.34	M	32.1	M	48.3	H
P ₁ M ₁	5.5	A	0.29	M	33.1	M	47.17	H
P ₁ M ₂	5.8	SA	0.21	M	37.1	M	56.37	H
P ₁ M ₃	6	SA	0.33	M	55.1	H	53.5	H
P ₂ M ₀	5.7	SA	0.37	M	48.1	H	67.4	H
P ₂ M ₁	5.8	SA	0.26	M	39.8	M	72.87	H
P ₂ M ₂	6.1	SA	0.22	M	40.1	H	68.2	H
P ₂ M ₃	6.2	N	0.28	M	43.1	H	57.4	H

*Abbervations: VA (Very Acidic); A (Acidic); SA (Somewhat Acidic); N (Neutral); L (Low); M (Medium); H (High); and VH (Very High).

Table 2. Chemical property analysis of research materials

Research materials	pH (H ₂ O)		N total (%)		P ₂ O ₅ (%)	K ₂ O (%)
	Score	Status*	Score	Status*		
Coal waste sludge	6.3	SA	—	—	—	—
Chicken manure	5.8	SA	1.93	VH	0.87	1.02

*Abbervations: SA (Somewhat Acidic).

The increase in P nutrients was not solely attributable to the soil; rather, the increase in P came from chicken manure containing P₂O₅ of 0.87%. The concentration of macro-nutrient N increased in the direction of increasing fertiliser dose, with the status of the nutrient remaining low to medium. This was due to the fact that chicken manure contains the highest concentration of N, at 1.93%, accompanied by other nutrients (Murakami et al., 2011). It can be observed that the application of post-treatment coal waste sludge and chicken manure has resulted in an increase in the status of P and N nutrients. This has been observed to occur from a low to a medium status for P and from a low to a medium status for N. The K nutrient status was naturally high, but there was a significant quantitative increase following treatment. Prior to treatment, the concentration of K nutrients was 415 ppm, while following

treatment, it increased to between 443 and 682 ppm. Furthermore, the application of chicken manure also added other macro nutrients, namely potassium (K), calcium (Ca) and magnesium (Mg), as well as micro nutrients manganese (Mn), copper (Cu) and zinc (Zn) (Warman and Cooper, 2000). The addition of manure serves to complement the soil nutrients of the treatment, as evidenced by Larney and Angers (2012), Rech et al. (2020), and Shaji et al. (2021). The incorporation of neutralised coal waste sludge and chicken manure compost into paddy field soil resulted in a discernible improvement in the chemical properties of the soil. A reduction in soil acidity, an increase in macro- and micro-nutrients, and their subsequent impact on the growth of rice plants during the vegetative and generative phases have been documented.

3.2 Effect of Treatment on Vegetative Phase

The results of the analysis of variance on the growth of rice plants at the age of 10 days after planting demonstrated that there were no significant differences between the treatments. It is postulated that rice plants are still undergoing a period of adaptation to their external environment. Young rice plants must adapt to the absorption of nutrients following their transfer from diverse environments, which are influenced by a range of factors, for example: temperature, humidity, and aeration. The effect is not significantly different until the age of 30 days after planting, but there is a clear overall tendency for the treatment of higher plants. The effect of each treatment was evident at the age of 60 days after planting, but the interaction (PxM) was not significant. The treatment of chicken manure was found to be significantly different from the control (P₀), while the treatment of M₂ and M₃ mud mixture was also found to be significantly different from the control (M₀). This is due to the nature of manure, which reacts slowly to the availability of nutrients it contains. Hussain et al. (2022) states that the primary nutrient influencing plant height is nitrogen (N).

Table 3. Effect of treatment on the plant height was evaluated at 10, 30 and 60 days after planting

Sludge + Paddy Soil (M)	Chicken Manure (P)			Average
	P ₀	P ₁	P ₂	
10 days of age				
M ₀	25.66	28	29	27.55
M ₁	28.66	29.33	30.33	29.44
M ₂	27	32	30.84	29.95
M ₃	27	33	30.66	30.22
Average	27.08	30.58	30.21	29.29
30 days of age				
M ₀	63.66	61.66	63.33	62.88
M ₁	64.66	65.33	73	67.66
M ₂	64.66	72.33	65.33	67.44
M ₃	64.66	71	69.66	68.44
Average	64.41	67.58	67.83	67.7
60 days of age				
M ₀	91	85.33	89.66	86.66 a
M ₁	87	95.66	90.33	91.00 ab
M ₂	87.66	101	101.66	96.77 bc
M ₃	89.66	102	104	98.66 c
Average	88.33 a	96.08 b	96.41 b	93.61

Note: Mean numbers followed by the same letter are not significantly different in the LSD test at the 5%.

3.3 Effect of Treatment on Generative Phase

Significantly different from the control (P₀) and its interaction with mud treatment, the mud treatment was not found to be significantly different (see Table 4). The 5% LSD test revealed

that the application of chicken manure to the soil resulted in a faster time to flowering of rice, with an average of 57.21 days for the P₁ and P₂ treatments, in comparison to the control, which took 60.42 days. The time to flower was found to be accelerated by 3.21 days. The interaction between the two treatments exerted a significant influence on the acceleration of flower discharge. Nutrients that play a role in flower formation include P (Khan et al., 2023; Osman et al., 2014). The interaction P₁M₃ exhibited the shortest flower exit time, at 53.33 days after planting. This acceleration is five days faster than the average observed in the interaction, while the interaction control (P₀M₀) is six days faster. A shorter flower exit time will result in a shorter harvest time.

The extent of the flowering time acceleration observed in rice plants following the application of each treatment is contingent upon the quantity of chicken manure and coal waste sludge administered. The P₁M₃ treatment combination exhibits the highest level of available phosphorus (P₂O₅) nutrient content, at 55.1 ppm. The soil pH is slightly acidic, at 6.0. This condition provides greater P uptake because its availability is close to optimal, with a pH of 6.5. Al-bound P is mostly released, and its availability is optimal (Hartemink and Barrow, 2023). P nutrients play a pivotal role in the generative phase, facilitating the acceleration of flowering. Chicken manure contains macronutrients (nitrogen, phosphorus, and potassium) and micronutrients that are complete and available to plants (Dey et al., 2019; Dikinya and Mufwanzala, 2010).

Table 4. Presents the effects of various treatments on generative phase

Sludge + Paddy Soil (M)	Chicken Manure (P)			Average
	P ₀	P ₁	P ₂	
Flower exit time (days)				
M ₀	59.33 abcd	60.66 abc	57.66 abcdef	59.22
M ₁	59.33 abcd	57.33 abcdefg	58 abcdef	58.22
M ₂	61 ab	56 defg	57.66 abcdef	58.22
M ₃	62 a	53.33 g	57 abcdefg	57.44
Average	60.42 a	56.83 b	57.58 b	58.27
Panicle length (cm)				
M ₀	19.66	20.66	21.33	20.55
M ₁	22	22.33	20.66	21.66
M ₂	22	21.33	21.66	21.66
M ₃	20.66	22.66	22.33	21.88
Average	21.08	21.75	21.5	21.44
Dry kernel weight per panicle (g)				
M ₀	2.12 c	2.33 bc	2.21 c	2.22
M ₁	2.66 abc	3.33 abc	3.33 abc	3.11
M ₂	3 b	3.66 abc	5.28 ab	3.98
M ₃	3.49 abc	5.33 a	5 abc	4.61
Average	2.82	3.66	3.96	3.47

Note: Mean numbers followed by the same letter are not significantly different in the LSD test at the 5%.

The length of rice panicles was not significantly affected by the treatments of chicken manure and mud, nor by their interactions. The longest panicle, measuring 22.66 cm, was produced by the P₁M₃ treatment, while the average length of all treatments was 21.44 cm. The lack of a significant difference between the treatments and their interactions on panicle length is thought to be due to the natural or genetic constituents of rice plants, as evidenced by the test plants in this study (Li et al., 2021).

The separate treatment of chicken manure and mud had no significant effect on the weight of dry kernels per panicle. However, the weight of dry kernels increased with increasing dose of treatment, although not yet to a level that could be considered significantly different. The results were found to be significantly different when the two treatments were combined,

resulting in a positive interaction (PxM) that increased the results for dry kernel weight per panicle. The interaction of the two treatments resulted in a reduction in soil acidity, thereby increasing the soil pH. The original acidic paddy soil, with a pH of 4.5, exhibited a reduction in overall soil acidity following the addition of neutralised sludge. The increase in soil pH value to 5.2–6.2 has a significant impact on the availability of all nutrients required by plants for optimal growth. According to Dey et al. (2019), Hartemink and Barrow (2023), Neina (2019), and Žurovec et al. (2021), this including macronutrients such as nitrogen (N), phosphorus (P), potassium (K), calcium (Ca) and magnesium (Mg), as well as micronutrients such as manganese (Mn), copper (Cu), zinc (Zn) and molybdenum (Mo).

Macronutrients whose availability in the soil is strongly influenced by pH is phosphorus (P). The results of soil analysis demonstrated an increase in P_2O_5 content at moderate to high levels (25–55.1 ppm), while without treatment, the content was only moderate (20 ppm). The absorption of P nutrients by plant roots occurs in the form of phosphate ions, with the largest being HPO_4^{2-} , which is more soluble, and then $H_2PO_4^{-1}$, which has a smaller solubility (Johan et al., 2021). Nutrient P plays a pivotal role in adenosine triphosphate (ATP) as a store and transfer of energy in plants (Choudhury et al., 2007; Khan et al., 2023; Osman et al., 2014; Plaxton and Tran, 2011; Solangi et al., 2023). It is utilised for various processes, including photosynthesis, protein synthesis, translocation and absorption of nutrients, and respiration. The role of phosphorus (P) nutrients is related to flower formation and seed development. When fulfilled, it increases the quantity and quality of fruit. For rice plants to achieve optimal production, a P requirement of between 20 and 22 kg per ha has been identified (Basavarajappa et al., 2021; Che et al., 2016; Solangi et al., 2019; Sukristiyonubowo et al., 2012). The P content of all treatments of chicken manure and mud was found to be between 20.8 and 48.05 kg per ha, while that of the control was only 17.44 kg per ha. Furthermore, several similar studies have been identified that are pertinent to the current findings. For instance, Khatana et al. (2023) found that the application of sewage sludge can enhance the availability of P nutrients. Additionally, the incorporation of coal waste, which provides complete nutrient, can improve cation exchange capacity and facilitate nutrient uptake in plant roots, thereby promoting increased plant productivity (Zukowska et al., 2023).

4. CONCLUSION

The results of the research indicate that the mixture of coal waste sludge that has been neutralised with paddy field soil has a beneficial effect on soil chemical properties. This is evidenced by a decrease in acidity to pH of 5.2 to 6.2, which optimises the availability of nutrients that can be absorbed by rice roots. The combination with chicken manure compost adds N and P_2O_5 nutrients to the medium status from low, while K_2O is added but at a high status. In the generative phase, the height of rice plants was evident after the age of 60 days since planting, indicating a delay in nutrient availability, especially N from compost. The vegetative phase of the treatment mixture had a positive effect on each other, accelerating the flowering time and increasing the weight of panicles. The optimal combination, designated as P₁M₃, exhibited the earliest flowering time (53 days) and the heaviest dry panicle (5.33 g). This treatment also resulted in a six-day reduction in the flowering time and a 3.21 g increase in the dry panicle weight compared to the control. These findings indicate that the coal waste sludge spill did not negatively impact paddy rice growth. Instead, it demonstrated a capacity to reduce soil acidity to an optimal level, which is contingent upon the presence of adequate macro- and micro-nutrient availability.

DECLARATION OF ORIGINALITY (DISCLAIMER)

The authors ~~declare that the article is a study conducted with scientific principles. Also, we do not use artificial intelligence (AI) technology, such as ChatGPT and similar supporting machines either during field observations or the article writing process. hereby declare that generative artificial intelligence (AI) technologies such as DeepL Translate and AI Proofreader have been used during the translating, editing, and improving of language readability.~~

NOVELTY STATEMENT

This research ~~provides an understanding of~~ offers insights into the chemical properties of paddy soil ~~when~~ mixed with mud, ~~and~~ chicken manure compost, ~~and~~ well as its effects on rice plants. Field findings confirm that ~~a mixture of combining~~ neutralized coal waste sludge with paddy field soil can ~~have a~~ systematically impact on influence soil chemical properties. ~~Other~~ Additionally, results indicate that the ~~spill~~ application of processed coal waste sludge actually has positive implications for rice ~~cultivation, where as~~ it can reduce the acidity of paddy soil ~~with optimal~~ while optimizing the availability of macro and micro-nutrients.

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