Dr. Nana Danapriatna, M.P.

BUKTI KORESPONDENSI ARTIKEL

COGENT FOOD AND AGRICULTURE

(Taylor and Francis)

Table of Contents

Registrasi akun untuk submit artikel (30 Januari 2023)

Gmail Nana Danapriatna <danapriatna.nana@gmail.com>

Registration on Taylor & Francis Online

1 pesan

Taylor & Francis <noreply@tandfonline.com> 30 Januari 2023 pukul 18.44
Balas Ke: support@tandfonline.com
Kepada: Nana Danapriatna <danapriatna.nana@gmail.com>

Taylor & Francis Online

The online platform for Taylor & Francis Online content

Dear Nana Danapriatna,

Thank you for registering an account at Taylor & Francis Online.

In order to complete the registration process, we need you to either click the link below, or cut and paste this link into your web browser, to confirm your email address.

https://www.tandfonline.com/action/verifyEmail?activationCode=ZCpxAazMDjck2dVYc9C2uGnAYzrWFWQM

Please note that this link is only valid for 1 hour.

Once your account has been confirmed, you will be able to purchase subscriptions, view paid content, and sign up to receive alerts about titles and subjects you are interested in.

If you need help please visit the Taylor & Francis Online Help Centre.

Kind regards,
Taylor & Francis Online Customer Services

Submit artikel (07 Februari 2023)

Gmail

Nana Danapriatna <danapriatna.nana@gmail.com>

Submission received for Cogent Food & Agriculture (Submission ID: 231870827)

1 pesan

agriculture@cogentoa.com <agriculture@cogentoa.com> 7 Februari 2023 pukul 06.07
Kepada: danapriatna.nana@gmail.com

Taylor & Francis
Taylor & Francis Group

Dear Nana Danapriatna,

Thank you for your submission.

Submission ID	**231870827**
Manuscript Title	**Application of Biochar and Biological Fertilizer to Improve Soil Quality and Oryza sativa L. Productivity**
Journal	**Cogent Food & Agriculture**
Article Publishing Charge (APC)	**USD $635.00 (plus VAT or other local taxes where applicable in your country)**

**APC only payable if your article is accepted*

You can check the progress of your submission, and make any requested revisions, on the Author Portal.

Thank you for submitting your work to our journal.
If you have any queries, please get in touch with agriculture@cogentoa.com.

For any queries relating to your APC, please get in touch with APC@tandf.co.uk

Kind Regards,
Cogent Food & Agriculture Editorial Office

Hasil review tahap 1 (14 Maret 2023)

Gmail **Nana Danapriatna <danapriatna.nana@gmail.com>**

231870827 (Cogent Food & Agriculture) A revise decision has been made on your submission

2 pesan

Cogent Food and Agriculture <em@editorialmanager.com> 14 Maret 2023 pukul 08.51
Balas Ke: Cogent Food and Agriculture <agriculture@cogentoa.com>
Kepada: Nana Danapriatna <danapriatna.nana@gmail.com>

Ref: COGENTAGRI-2023-0141
231870827
Application of Biochar and Biological Fertilizer to Improve Soil Quality and Oryza sativa L. Productivity
Cogent Food & Agriculture

Dear Danapriatna,

Your manuscript entitled "Application of Biochar and Biological Fertilizer to Improve Soil Quality and Oryza sativa L. Productivity", which you submitted to Cogent Food & Agriculture, has now been reviewed.

The reviews, included at the bottom of the letter, indicate that your manuscript could be suitable for publication following revision. We hope that you will consider these suggestions, and revise your manuscript.

Please submit your revision by Apr 12, 2023, if you need additional time then please contact the Editorial Office.

To submit your revised manuscript please go to https://rp.cogentoa.com/dashboard/ and log in. You will see an option to Revise alongside your submission record.

If you are unsure how to submit your revision, please contact us on agriculture@cogentoa.com

You also have the option of including the following with your revised submission:

* public interest statement - a description of your paper of NO MORE THAN 150 words suitable for a non-specialist reader, highlighting/explaining anything which will be of interest to the general public

* about the author - a short summary of NO MORE THAN 150 WORDS, detailing either your own or your group's key research activities, including a note on how the research reported in this paper relates to wider projects or issues.

* photo of the author(s), including details of who is in the photograph - please note that we can only publish one photo

If you require advice on language editing for your manuscript or assistance with arranging translation, please do consider using the Taylor & Francis Editing Services (www.tandfeditingservices.com).

Please ensure that you clearly highlight changes made to your manuscript, as well as submitting a thorough response to reviewers.

We look forward to receiving your revised article.

Best wishes,

Manuel Tejada Moral
Editor-in-Chief
Cogent Food & Agriculture

Comments from the Editors and Reviewers:

Do you want to get recognition for this review on Publons?</p><p><i> Don't let your reviewing work go unnoticed! Researchers the world over use Publons to effortlessly track their valuable peer review contributions for any journal. If you opt in, your Publons profile will automatically be updated to show a verified record of this review in full compliance with the journal's review policy. If you

don't have a Publons
profile, you will be prompted to create a free account. [Learn
more]</i></p>

Reviewer 1: Yes

Title, Abstract and Introduction – overall evaluation
Reviewer 1: Sound with minor or moderate revisions

Methodology / Materials and Methods – overall evaluation
Reviewer 1: Sound with minor or moderate revisions

Objective / Hypothesis – overall evaluation
Reviewer 1: Sound with minor or moderate revisions

Figures and Tables – overall evaluation
Reviewer 1: Sound

Results / Data Analysis – overall evaluation
Reviewer 1: Outstanding

Interpretation / Discussion – overall evaluation
Reviewer 1: Sound

Conclusions – overall evaluation
Reviewer 1: Sound

References – overall evaluation
Reviewer 1: Outstanding

Compliance with Ethical Standards – overall evaluation
Reviewer 1: Outstanding

Writing – overall evaluation
Reviewer 1: Sound

Supplemental Information and Data – overall evaluation
Reviewer 1: Sound

Comments to the author
Reviewer 1: The article entitled "Application of Biochar and Biological Fertilizer to Improve Soil Quality and Oryza sativa L. Productivity" is submitted to the journal Frontiers in Agronomy section Agroecological Cropping Systems. This study at determining the potential of biochar and biological fertilizers to improve the quality of soil planted with lowland rice.
This paper is a good fit for the journal's audience and subject matter, specifically the, biochar and biological fertilizer are environmental friendly applications which can reduce the use of chemical fertilizer in sustainable agriculture.
I recommend this article for publication in the journal with revision based on the comments and questions detailed below.
1. Please improve the language of the paper it seems to be inappropriate in many places, especially in the abstract and introduction sections. There are also some spelling as well as grammatical mistakes in the manuscript that should be corrected. Write the study's objective in a more appropriate way and at the proper place in the manuscript. Make the conclusion section briefer. Finally, this will improve your manuscript in a better way.
2.When was biochar applied? Before the plantation? Mention the days.
3. It will be better to give names to treatments such T1, T2....T6 or Control, 0BC+BF, 10BC, 10BC+BF, 25BC, 25BC+BF,
4. Write the experimental design clearly, pot size, biochar rate to pot soil, biochar method adding to soil, etc
5. Which rate of biochar was beneficial for soil N: P: K
6. What were the properties of biochar and biological fertilizers? Provide a table where the contents of nutrients are presented of both amendments.
7. Write standard units in tables, what is ppm, should be explained in the table caption.
8. A Pearson correlation or regression analysis among soil attributes and plant attributes should be done to understand the impact of biochar on soil then, consequently, on plant growth and development.
9. Species name should be italic such as Pseudomonas sp. etc

Abstract
The effect of this treatment......... which treatment? Rephrase the sentence and check throughout the manuscript.

I advise you to revise your manuscript following ALL the suggestions of those reviewers. For this, I recommend that you highlight in different colors the changes made in accordance with the suggestions of each referee in the revised manuscript.
Since there have been two referees, you must use two different colors (one for each referee).
This is very important to me, because in this way I can know if you have followed ALL the suggestions that these referees indicate.
king regards

Danapriatna_CFA 2023b_Revised Manuscript_PR New.docx
2097K

Reminder untuk submit sesuai hasil review tahap 1 (05 April 2023)

Gmail

Nana Danapriatna <danapriatna.nana@gmail.com>

Author Reminder - Your revision is due soon

1 pesan

Cogent Food and Agriculture <em@editorialmanager.com> 5 April 2023 pukul 11.36
Balas Ke: Cogent Food and Agriculture <agriculture@cogentoa.com>
Kepada: Nana Danapriatna <danapriatna.nana@gmail.com>

Ref: COGENTAGRI-2023-0141
231870827
Application of Biochar and Biological Fertilizer to Improve Soil Quality and Oryza sativa L. Productivity
Cogent Food & Agriculture

Dear Nana Danapriatna,

We hope you are well and that work on your revision for "Application of Biochar and Biological Fertilizer to Improve Soil Quality and Oryza sativa L. Productivity", 231870827, is moving along steadily.

This email is to remind you your revision is due on on Apr 12, 2023.

As we have not yet received your revised submission, we would like to remind you that we are here to help you should you need any support. Please contact us at OAFA-peerreview@journals.tandf.co.uk for assistance with your revised submission.

Alternatively, if you have decided not to continue with your revision, and would prefer to submit your manuscript elsewhere, please let us know by emailing OAFA-peerreview@journals.tandf.co.uk. You may also decide to submit this paper elsewhere upon declining to revise.

Please ensure you include the following elements in your revised submission/Please check the attachment for information on what you will need to include in your revised submission. If you have any further questions about your submission, please do not hesitate to contact us.

Best wishes,

Cogent Food & Agriculture - Editorial Office

Application of Biochar and Biological Fertilizer to Improve Soil Quality and *Oryza sativa L*. Productivity

Nana Danapriatna[1]*, Ismarani Ismarani[1], Moh. Dede[2,3,4,5]

[1]*Faculty of Agriculture, Universitas Islam 45 Bekasi, Bekasi City, West Java, Indonesia (17113)*

[2]*Doctoral Program on Environmental Science, Postgraduate School (SPS), Universitas Padjadjaran, Bandung City, West Java, Indonesia (40132)*

[3]*Cakrabuana Institute for Geoinformation, Environment and Social Studies (CIGESS), Cirebon Regency, West Java, Indonesia (45188)*

[4]*National Research and Innovation Agency of Indonesia (BRIN), Jakarta Pusat, DKI Jakarta, Indonesia (10340)*

[5]*Faculty of Social Sciences Education (FPIPS), Universitas Pendidikan Indonesia, Bandung City, West Java, Indonesia (40154)*

Corresponding email:
Nana Danapriatna (nana.danapriatna@unismabekasi.ac.id, danapriatna.nana@gmail.com)

Author email:
Ismarani Ismarani (raniisma@unismabekasi.ac.id) Moh.
Dede (m.dede.geo@gmail.com)

Application of Biochar and Biological Fertilizer to Improve Soil Quality and *Oryza sativa L.* Productivity

ABSTRACT

Rice husk is an agricultural waste that can be processed into biochar as the main ameliorant to improve soil quality and crop productivity. Biochar has the potential to be combined with biological fertilizers for intensive paddy farming. This study aimed at assessing the potential of biochar and biological fertilizers to improve soil quality and lowland paddy rice (*Oryza sativa L.*). This study used an experimental approach and the treatment of rice plants was carried out in a greenhouse. Rice plants were given biochar and biological fertilizer containing N-fixing and P-solvent microorganisms. The completely randomized experimental design involved four replications with six treatment combinations. The effect of this treatment was analyzed using analysis of variant (ANOVA) and least significant difference (LSD) with a 95% confidence level (α 0.05). We found that the optimal combination is 10 grams of biochar with three times of fertilizer (10BC+BF) on all parts of the plant. This research showed that the combination of biochar with biological fertilizers was able to significantly affect N, P and K in the soil. Only N in rice plants was also significantly affected by the treatment. The combination capable to increase the rice productivity according to paddy clumps and yield.

Keywords: endophyte microorganism, paddy, rice husk, soil fertility, yield production.

1. INTRODUCTION

Strategies to increase agricultural productivity rely heavily on the use of inorganic fertilizers. In Indonesia, government policies that support the use of inorganic fertilizers by farmers are met through subsidies (Hoffmann *et al.* 2020). This subsidy policy budget for inorganic fertilizers costs between IDR 25-40 trillion per year (Fahmid *et al.* 2022). However, this policy is still ineffective because it has not been able to guarantee the availability of adequate fertilizer with rational price – according to the highest retail price (HRP) set by the Indonesian central government (Sahim *et al.* 2018). Another problem for this agrarian country is the large number of agricultural lands that have been converted into built-up areas for settlements, industries, and infrastructure (Dede *et al.* 2022; Susiati *et al.* 2022). Agricultural land also faces other threats, such as erosion and decreasing soil fertility, these affect the topsoil is carried away by rainwater and causing environmental problems for aquatic ecosystem (Sunardi *et al.* 2022).

Soil degradation is a real threat to farmers because it affects agricultural business and land productivity. Rice's field continues to decrease in harvest area, even per farmer family only has arable land between 0.1-0.4 hectare, which is accompanied by low professional regeneration for this occupation (Harini *et al.* 2012). It requires farmers and stakeholders to develop appropriate agricultural technology innovations by utilizing local resources, cheap and abundant organic materials. Paddy farming produces residues such as rice husk, straw and chaff. For rice husk, it is well known for its ability to restore soil quality and increase nutrient holding (Varela-Milla *et al.* 2013). Commercial rice farming requires 5-10 tonnes of organic substances per hectare (Walianggen 2021; Kantikowati *et al.* 2022). Rice husk can be processed into

Commented [A1]: Scientific name should be italic
Commented [A2R1]: We fixed this issue
Commented [A3]: Recheck line
Commented [A4R3]: Thank you, we fixed the line to be more informative
Commented [A5]: Use the same format for writing refernces
Commented [A6R5]: We fixed this issue. For your information, the family name for this author contains two word
Commented [A7]: Use same for format for writing
Commented [A8R7]: We fixed this issue.

biochar and used as a soil amendment to increase organic matter content, stabilize pH, and gain harvested production of various crops (Karam *et al.* 2021). Rice productivity after being given biochar can increase up to 55% depending on agroecosystem conditions and crop varieties. Biochar is a high-carbon organic compound up to 40-60%, it comes from the pyrolysis process of rice husk and is resistant to weathering through contact water, atmosphere, and organisms for decades in the soil (Uchimiya *et al.* 2017). Despite containing carbon, biochar from rice husk has ash (around 50%) with small amounts of N, P, K, Ca, Mg, Na, Al, and Fe (Ammal *et al.* 2020). Several studies have shown that the use of biochar affected soil characteristics in terms of water-holding capacity, pH, and activity of microorganisms (Glaser *et al.* 2015). Shetty and Prakash (2020) observed an increase in nutrient uptake by paddy after application of rice husk biochar. Application biochar on agricultural land increased its ability to store water and nutrients, reduce evaporation, and suppress the development of pests and plant diseases originating from the soil (Bakhat *et al.* 2021). Research has demonstrated that under certain conditions, biochar does not have a significant effect on soil, plant nutrition, and biomass production. This condition is caused by small doses of biochar, those agricultural activities are done in short periods of treatment (under one year) and without considering environmental factors such as climate, soil characteristics and paddy varieties (Major *et al.* 2010). The potential problem occurred when biochar is applied to intensive rice farming without proper experiments and consideration.

For commercial and intensive agricultural purposes, biochar is still unable to add significant soil nutrients. To tackle this problem, combination of biochar and N fertilizer able to reduce soil bulk density, increase water holding capacity and soil chemical status (Oladele *et al.* 2019). Although inorganic fertilizers could be a solution, rice farming requires an eco-friendly solution through the usage of biological fertilizers to achieve sustainable agriculture. Biochar and compost have been proven to increase rice growth, the combination was able to change soil characteristics – soil organic carbon and microbial biomass. Based on this phenomenon, biochar has the potential to be combined with biological fertilizers for rice plantations. (Rajput *et al.* 2019). Biological fertilizer could be made from a combination of *Pseudomonas mallei* and *Penicillium sp.* which have been shown to increase crop yields by up to 20% and reduce 25% the dose of phosphate fertilization (Fitriatin *et al.* 2009).

Biological fertilizers are inoculants with active ingredients from living organisms that function to bind certain nutrients and facilitate the availability of various nutrients in the soil for plants (Carvajal- Muñoz and Carmona-Garcia 2012; Kumar *et al.* 2021). Biological fertilizers, apart from being abundant in microorganisms, also contain N-fixers and P-solvents. This combination could improve soil quality, and increase fertilization efficiency as well as rice productivity. The use of biochar and biological fertilizers will encourage farmers' income toward supporting sustainable agriculture. Therefore, this study aimed to determine the effect of biochar and biological fertilizers to improve soil quality and rice productivity.

Commented [A9]: Rewrite

Commented [A10R9]: We have rewritten these lines.

Commented [A11]: Rewrite it

Commented [A12R11]: Thank you, we have improved this line.

2. MATERIALS AND METHODS

2.1. Description of the Study Area

This greenhouse experiment was carried out at the Faculty of Agriculture, Universitas Islam 45 (Unisma) Bekasi using Ciherang's rice variety as test crop. The Unisma’s greenhouse is located at 6° 15’ 27.86” S and 107° 00’ 23.79 E in Bekasi City, West Java, Indonesia with an elevation of 7 meters from the sea level. The study adopted a completely randomized design with four replications. Soil and rice received 6 (six) treatment combinations, including 0 gram of biochar without fertilizer (0BC); 0 gram of biochar with fertilizer (0BC+BF); 10 grams of biochar without fertilizer (10BC); 10 grams of biochar with fertilizer (10BC+BF); 25 grams of biochar without fertilizer (25BC); and 25 grams of biochar with biofertilizer (25BC+BF). Biochar was mixed in the soil one day before the rice was planted. The rice plant sample was 24 pots with the layout and treatment scheme as presented in **Fig 1**.

1	2	3	4	5	6	7	8
(0BC) 2	(10BC) 2	(25BC) 3	(0BC) 4	(10BC) 3	(10BC+BF) 3	(0BC+BF) 2	(25BC+BF) 3
(10BC+BF) 2	(0BC) 3	(25BC+BF) 4	(25BC) 2	(10BC) 1	(0BC+BF) 1	(0BC) 3	(25BC) 4
(0BC) 1	(10BC) 4	(25BC) 1	(10BC+BF) 4	(10BC,+BF) 1	(25BC+BF) 2	(0BC+BF) 4	(25BC+BF) 1

Figure 1. Layout for the experiment in the greenhouse.

Figure 2. Biochar and biological fertilizer for rice’s treatments.

Biochar was obtained from rice husks by a combustion process in the pyrolysis machine at temperatures between 250-3500 ^{o}C for one hour. For the biological fertilizer, this study consisted of two N-fixing endogenous bacteria (*Bacillus sp.* 1 x 10^{7}, *Azospirillum sp.* 1 x 10^{7}) and one phosphate-solubilizing bacteria (*Pseudomonas sp.* 1 x 10^{7}) as a consortium. Every 30 grams of the biological fertilizer should be dissolved in 320 ml of water, biochar and the biological fertilizers also their contents showed in **Fig 2** and **Table 1**. Rice seeds were placed in each 12 liters bucket that had previously been filled with 10 liters of agricultural soil (entisols) from Karawang Regency, Indonesia (**Table 2**). The area has annual temperature of 27^{o}C with rainfall reach 1,500-3,000 mm. Karawang Regency is a center for national rice production, hence rice farming has made it a leading economic sector (Dede *et al.* 2016).

A concentrated solution of fertilizer must be added with 20 liters of water. Fertilization was sprayed whole part of the rice plant on days 7, 14 and 28. Each plant is also given inorganic fertilizer according to the Indonesian Ministry of Agriculture's dose for rice fields in Karawang (Rafiuddin *et al*. 2016). Paddy needs inorganic fertilizers such as 3.75 grams of Urea (equivalent to 70% the recommendation), one gram of super-phosphate (SP-36), and 0.625 grams of KCl. These inorganic fertilizers aim to adapt to real conditions and avoid biological adaptation failure (Fang *et al*. 2021). Paddy was observed every week, whereas the productivity and whole crops were analyzed to understand the different effects of treatments.

Commented [A13]: Materials and methods should be written in past tense and it should be explained in the way you performed it, not in instructive manner.

Commented [A14R13]: Thank you, we have rewritten these lines.

Commented [A15]: Rewrite the materials and methods in past tense. The methods used in study not clearly explained.

Commented [A16R15]: Thank you, we have rechecked and rewritten this paragraph.

Table 1. Properties of biochar and biological fertilizer.

Properties	Biochar	Biological fertilizer
Moisture (%)	5.52	Not available
Volatile matter (%)	23.74	Not available
Ash (%)	35.51	Not available
C (%)	34.45	1.36
N (%)	0.32	0.08
P (%)	0.15	2.41
K (%)	0.31	2.96

Table 2. Soil characteristic for the experiment.

Parameter	Technique	Detail	Status
Soil texture	Peptizing	Sand (10.20%), silt (60.50%) and clay (28.30%)	Silty clay loam
pH	Potentiometric	H_2O (7.05) and KCl (6.10)	Neutral

2.2. Data Analysis

Different treatments of soils were observed in nutrient content (N, P, K, C). Effects on rice plants were observed by nutrient (N, P, K), panicle number and yield productivity. This study used Analysis of Variant (ANOVA) and Least Significant Difference (LSD) (**Equation 1-2**). ANOVA compares the means of two or more data groups, while LSD can measure treatment differences and serves as a post hoc test (Ismail *et al*. 2022; Nurbayani and Dede 2022; Zhang *et al*. 2022a). LSD required the mean squared error (MSE) and degrees of freedom for error (dfE) from ANOVA (Frene *et al*. 2021). These analyses were performed in Microsoft Excel and PSPP by 95% confidence level with a significance limit (p-value) less than 0.05.

$$F = \frac{MST}{MSE} \quad (1)$$

$$LSD_{\alpha} = t_{(\alpha, dfE)} \sqrt{\frac{2\,MSE}{r}} \quad (2)$$

where F is the F-statistical value, MST known as the mean square of treatments, MSE for the mean square error, α indicates the significance value, and r is the Pearson's correlation.

Commented [A17]: Write it in summarized manner

Commented [A18R17]: Thank you, we made it more concise.

3. RESULTS AND DISCUSSION

3.1. Effect on Soil Quality

Biological fertilizers in the growing media can increase the K content to more than 150 parts per million (ppm), even in a number of samples that do not use biochar from rice husks. The use of at least 10 grams of biochar has increased the P content to above 30 ppm. The application of one of them, biochar and biological fertilizers, has been shown to increase the N content in the soil. The results of ANOVA in **Table 3** show that the soil groups with these treatments proved to have a significant effect on chemical component, except for C-organic. Even though the N content was increased, the non-dynamic carbon content caused the C/N ratio to remain unchanged (Ye *et al*. 2014; Pérez and Torres-Bazurto 2020). In biochar the use of biochar with or without biological fertilizers can increase the N content between 1.36-1.81%. This result is strengthened by the significant test of biochar's treatment (p-value less than 0.05 with 95% confidence level). biochar results prove that biochar can increase the absorption of the main nutrients of plants. However, the combination should be able to improve soil quality and rice productivity.

Commented [A19]: Add heading and sub heading

Commented [A20R19]: We added two sub-headings in the manuscript.

Table 3. Effects of biochar and biological fertilizers on soils and paddy.

Variable	Parameter	F	df	p-value	SEM	SED	CV (%)	LSD
Soil quality	N	4.12	23(5)	0.01	0.00	0.01	3.30	0.01
	P	5.01	23(5)	0.00	1.70	2.40	10.40	5.04
	K	7.13	23(5)	0.00	7.90	11.18	10.23	23.48
	C-organic	2.17	23(5)	0.10	0.02	0.03	2.16	0.07
Paddy crops	N	3.92	23(5)	0.01	0.13	0.18	17.39	0.37
	P	1.68	23(5)	0.19	0.01	0.02	12.61	0.04
	K	1.09	23(5)	0.40	0.30	0.42	14.49	0.88

Note: NPK stands for nitrogen, phosphorus, and potassium; C is the carbon; df is the degree of freedom; SEM is the standard error of mean; standard error of difference; CV is the coefficient of variation; LSD is the least significant difference.

Table 4. Effects of biochar and biofertilizer application on selected soil properties

Treatment	N (%)	P (ppm)	K (ppm)	C-org (%)	C/N ratio
0BC	0.19 a	26.97 a	129.65 a	2.04 a	10.90 a
0BC+BF	0.20 b	31.45 abc	152.95 ab	2.07 a	10.49 a
10BC	0.20 b	30.17 ab	139.38 a	2.05 a	10.42 a
10BC+BF	0.20 bc	35.35 cd	167.53 bc	2.09 a	10.47 a
25BC	0.20 bc	34.42 bcd	148.50 ab	2.09 a	10.33 a
25BC+BF	0.21 c	37.32 d	188.73c	2.13 a	10.29 a
LSD	0.01	5.04	23.48	0.09	0.58

Note: The same letter in one column indicates no significant difference; ppm is parts per million.

The usage of biochar with biological fertilizers has been, significantly, increase N, P, and K in the soil. This indicates that microorganisms present in biological fertilizers (*Bacillus sp.*, *Azospirillum sp.*, and

Pseudomonas sp.) play an active role in fixing N and dissolving P. Based on LSD test, these treatments were not able to significantly affect changes in C-organic and C/N in the soil (**Table 4**). The highest N and P were in the sample that received 25 grams of biochar with biological fertilizer. These combinations affect the nutrients, including microorganisms and soil physical properties – density, porosity, water content (Masulili *et al.* 2010). Meanwhile in rice plants, this treatment only had a significant impact on increasing N content. From LSD test, it was found that these treatments were not able to increase P and K content in the plant, because the changes were very minor (**Table 5**). A highest N was found in the treatment of 10 grams of biochar with biological fertilizer (10BC+BF). These results were confirmed by Chen *et al.* (2022), the use of biochar and organic fertilizers had positive effects on soil pH and organic carbon.

Commented [A21]: Recheck

Commented [A22R21]: Done, we rechecked this line

Table 5. Various combinations of biochar and biological fertilizers on rice plants.

Treatment	N (%)	P (ppm)	K (ppm)
0BC	1.28 a	0.23 a	3.93 a
0BC+BF	1.14 a	0.21 a	3.92 a
10BC	1.36 ab	0.21 a	3.72 a
10BC+BF	1.81 c	0.24 a	4.23 a
25BC	1.42 ab	0.24 a	4.10 a
25BC+BF	1.66 bc	0.26 a	4.61 a
LSD	0.37	0.04	0.88

Note: The same letter in one column indicates no significant difference; ppm is parts per million.

3.2. Effect on Rice Productivity

The combination of biochar and biological fertilizers not only has a positive effect on improving soil quality and plant content, but also has the potential to increase productivity as seen from the number of clumps of rice and dry grain harvested. LSD test showed that the combination treatment of 10 grams of biochar and biological fertilizer (10BC+BF) was the most optimal, efficient, and significant increase in rice productivity as shown in **Table 6**. This treatment increased the number of clumps by 25%, and the dry grain harvest almost doubled. It further proves that the combination does not only have a positive effect on clumps, but also on body size and dry rice grains. Improving soil quality ensures that essential nutrients (N, P, and K) can be absorbed by plants, resulting in optimal growth and more abundant rice yields (Budiono *et al.* 2019; Ye *et al.* 2019; Paiman *et al.*, 2021). The biochar maintains nutrients in planting media from water solution and the top layer is not eroded by runoff. Improving carbon content in the soil brought benefits to the cereals family's root system (Imran, 2022).

Commented [A23]: Not clear

Commented [A24R23]: We rewritten this line.

Table 6. Various combinations of biochar and biological fertilizers on rice productivity.

Treatment	∑ clumps	Dry grain per pot (gram)
0BC	16 a	31.14 a
0BC+BF	19 ab	40.15 ab
10BC	17 a	51.55 bc
10BC+BF	21 bc	61.87 c
25BC	20 bc	53.26 bc
25BC+BF	22 c	62.44 c
LSD	3	15.562

Note: The same letter in one column indicates no significant difference.

Biochar from rice husk is proven to be able to improve soil characteristics and increase fertilization efficiency, thus nutrient is more absorbed by plants. The application of 10 grams of biochar has increased the content of macro nutrients in the soil. Biochar not only contain carbon, but other ingredients such as 50% cellulose, 25-30% lignin, 15-20% silica, and 10-15% moisture (Singh 2018; Hossain *et al.* 2020). On the other hand, biochar influences the nutrient cycle and keeps them longer in the soil (Petrus *et al.* 2020; Zhang *et al.* 2022b). The effect of biochar is better when soil and plant are exposed to biological fertilizers from spraying. Microorganisms contained in the fertilizer increase the nutrients in the soil by fixing and releasing nitrogen, phosphate, and potassium compounds. Biochar is an ideal habitat for various soil- fertilizing bacteria (Ebe *et al*. 2019). This study confirmed that biological fertilizers have improved soil quality better than only used synthetic fertilizers. Biological fertilizers restore the soil ecosystem and do not disturb macroorganisms on agricultural lands (Escobar and Solarte 2015; Pellejero *et al*. 2021). The application of biochar with biological fertilizers should consider soil types, rocks, climatological factors, rice varieties, and local community culture to increase agricultural productivity.

Commented [A25]: Rewrite in proper manner as experiment already conducted. So Justified your result with proper discussion. Not used the terms can, may be

Commented [A26R25]: We have rewritten this paragraph

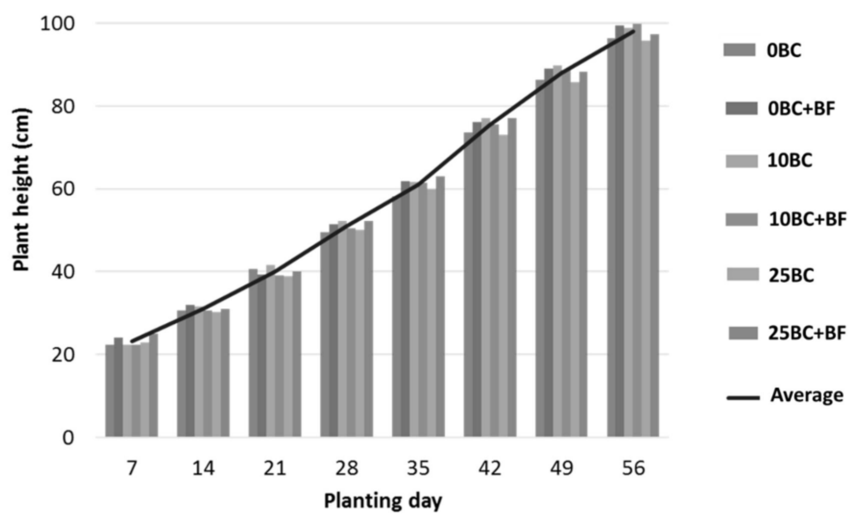

Figure 3. Comparison of the rice's growth in 56 days in six different treatments (bottom) after planting day.

The use of biochar and biological fertilizers should be in a right dose. We recommend using 10 grams of biochar per pot along with the biological fertilizer (10BC+BF). This treatment is effective and efficient to improve soil quality as well as rice productivity as shown by the LSD test. Excess biochar only adds biomass and reduces agricultural productivity (Yu *et al*. 2018; Ullah *et al*. 2020). The biochar dose of 10 grams per pot should be adjusted in the field's scale and prevent harm to rice plants (**Fig 3**). Awad *et al*. (2018) stated that biochar had toxicity potential under redox conditions due to land flooding and poor drainage. Although it was a pragmatic solution, excessive biochar would detrimental to farmers with weak socio-economic status without receiving subsidies from the government (Mohammadi *et al*. 2020). For biological fertilizers, the dosage for each hectare is 300 grams for three applications in 7-14 days interval. Excess in biological fertilizers causes an imbalance of soil microorganisms and changes to pathogens. An abundance of Bacillus sp. in agricultural ecosystems causes diarrhea and food contamination associated with vegetables, rice, ready-to-eat food, milk and egg (Haque *et al*. 2021). Overpopulation of *Pseudomonas sp.* would harmful to the ecosystem of *Pseudomonal pneumonia* (Public Health Agency of Canada 2011). Rice husk biochar for paddy cultivation must be used efficiently by considering its effectiveness to increase productivity. This study showed that very high doses of biochar did not give optimal results, even though the clumps paddy was abundant. The right dose is able to improve aeration and soil function, resulting in an increase in soil physicochemical properties, which results in better health, structure, and soil fertility for paddy crops (Sy *et al.* 2021). The biochar effect can actually be significant when combined with biological fertilizers, it triggers increasing biomass in the soil and ultimately has a positive impact on paddy productivity (Hadiawaty *et al.* 2019). However, in salt-affected soil, the combination of biochar and biological fertilizers was less than optimal where P and exchangeable K concentrations did not change significantly, hence the paddy productivity was not gained (Nguyen *et al.* 2018). Therefore, it is very important to pay more attention to soil and its agroecosystem before applying biochar and biological fertilizers.

Commented [A27]: Reframe it again. Statistical part is absent here.

Commented [A28R27]: Thank you, we have rewritten this pagaraph and also mentioned the LSD result.

4. CONCLUSSION

Application of biochar with biological fertilizer had significant effects on soil N, P, and K, but this treatment was not significant to increase C-organic and C/N. For paddy, biochar and biological fertilizer increase N in the whole part of plants. This treatment stimulates paddy to grow faster and produces dry yields higher than conventional treatments. The best combination for lowland rice is 10 grams of biochar with 3 times fertilizing (10BC+BF) on all parts of the plant. The right doses would avoid adverse effects on plants, animals, and humans. Further research in extensive paddy field trials is required to know these effects on a massive scale. In addition, the treatment of crops with biochar and biofertilizers should be considered due to the rice varieties that exist among farmers.

Commented [A29]: Rewrite it

Commented [A30R29]: We have rewritten this paragraph.

ACKNOWLEDGMENT

The authors thank to famers who support in the field experiment, also to Millary Agung Widiawaty (BATAN-BRIN) for all support in this manuscript preparation. This research was funded by Universitas Islam 45 Bekasi through ‘Hibah LPPM Unisma’ (123/LPPM.UNISMA/1.1.I/II/2021) to the first author.

AUTHORS' CONTRIBUTIONS

ND: Conceptualization, Methodology, Software, Investigation, Funding, Writing – Original Draft; **II:** Conceptualization, Methodology, Resources, Supervision; **MD:** Formal analysis, Validation, Writing – Review and Editing.

DECLARATION OF INTEREST STATEMENT

The authors declare there is no conflict of interest.

ETHICAL STATEMENT

Not applicable.

REFERENCES

Ammal A, Abunyewa AA, Yeboah E 2020 Influence of integrated soil fertility management on the vegetative growth parameters of Zea mays in the guinea savanna eco-zone of Ghana. J. Agric. Sci. Belgr. 65(2): 187-197. https://doi.org/10.2298/JAS2002187

Awad YM, Wang J, Igalavithana AD, Tsang DCW, Kim KH, Lee SS, Ok YS 2018 Biochar effects on rice paddy: Meta-analysis. Adv Agron 148: 1-32. https://doi.org/10.1016/bs.agron.2017.11.005

Bakhat HF, Bibi N, Fahad S, Hammad HM, Abbas S, Shah GM, Zakir A, Murtaza B, Ashraf MR 2021 Rice husk bio-char improves brinjal growth, decreases insect infestation by enhancing silicon uptake. Silicon 13(10): 3351-3360. https://doi.org/10.1007/s12633-020-00719-4

Budiono R, Adinurani PG, Soni P 2019 Effect of new NPK fertilizer on lowland rice (Oryza sativa L.) growth. IOP Conf Ser Earth Environ Sci 293: 012034. https://doi.org/10.1088/1755- 1315/293/1/012034

Carvajal-Muño JS, Carmona-Garcia CE 2012 Benefits and limitations of biofertilization in agricultural practices. Livest Res Rural Dev 24(3): 1-8.

Casler MD 2015 Fundamentals of experimental design: Guidelines for designing successful experiments. Agron J 107(2): 692-705. https://doi.org/10.2134/agronj2013.0114

Chen L, Li X, Peng Y, Xiang P, Zhou Y, Yao B, Zhou Y, Sun C 2022 Co-application of biochar and organic fertilizer promotes the yield and quality of red pitaya (Hylocereus polyrhizus) by improving soil properties. Chemosphere 294: 133619. https://doi.org/10.1016/j.chemosphere.2022.133619

Cho JB, Guinness J, Kharel T, Maresma A, Czymmek KJ, Aardt J, Ketterings QM 2021 Proposed method for statistical analysis of on-farm single strip treatment trials. Agronomy 11(10): 2042. https://doi.org/10.3390/agronomy11102042

Dede M, Asdak C, Setiawan I 202 Spatial dynamics model of land use and land cover changes: A comparison of CA, ANN, and ANN-CA. Register J Ilm Teknol Sist Inf 8(1): 38-49. https://doi.org/10.26594/register.v8i1.2339

Dede M, Sewu RSB, Yutika M, Ramadhan F 2018 Analisis potensi perekonomian sektor pertanian, kehutanan, dan perikanan serta pertambangan dan penggalian di Pantura Jawa Barat. In: Prosiding Seminar Nasional Epicentrum 5.5. Universitas Pendidikan Indonesia, Bandung. https://doi.org/10.31227/osf.io/mc2t6

Ebe S, Ohike T, Okanami M, Ano T 2019 Components of rice husk biochar in promoting the growth, sporulation and iturin A production of Bacillus sp. strain IA. Z Naturforsch C 74(7-8): 211-217. https://doi.org/10.1515/znc-2018-0223

Escobar N, Solarte V 2015 Microbial diversity associated with organic fertilizer obtained by composting of agricultural waste. Int J Biosci Biochem Bioinform 5(2): 70-79. https://doi.org/10.17706/ijbbb.2015.5.2.70-79

Fahmid IM, Jamil A, Agustian A, Hatta M, Aldillah R, Yofa RD, Susilowati SH 2022 Study of the impact of increasing the highest retail price of subsidized fertilizer on rice production in Indonesia. Open Agric 7(1): 348-359. https://doi.org/10.1515/opag-2022-0087

Fang P, Abler D, Lin G, Sher A, Quan Q 2021 Substituting organic fertilizer for chemical fertilizer: Evidence from apple growers in China. Land 10(8): 858. https://doi.org/10.3390/land10080858

Fitriatin BN, Yuniarti A, Mulyani O, Fauziah FS, Tiara MD 2009 Pengaruh mikroba pelarut fosfat dan pupuk P terhadap P tersedia, aktivitas fosfatase, P tanaman dan hasil padi gogo (Oryza sativa. L.) pada ultisol. Agrikultura 20(3): 210-215. https://doi.org/10.24198/agrikultura.v20i3.961

Frene JP, Faggioli V, Covelli J, Reyna D, Gabbarini LA, Sobrero P, Ferrari A, Gutierrez M, Wall LG 2022 Agriculture by irrigation modifies microbial communities and soil functions associated with enhancing C uptake of a steppe semi-arid soil in northern Patagonia. Front Soil Sci 2: 835849. https://doi.org/10.3389/fsoil.2022.835849

Glaser B, Wiedner K, Seelig S, Schmidt HP, Gerber H 2015 Biochar organic fertilizers from natural resources as substitute for mineral fertilizers. Agron Sustain Dev 35(2): 667-678. https://doi.org/10.1007/s13593-014-0251-4

Hadiawati L, Sugianti T, Triguna Y 2019 Rice-husk biochar for better yield of lowland rainfed rice in Lombok, Indonesia. AIP Conf. Proc. 2199: 040001. https://doi.org/10.1063/1.5141288

Haque M, Wang F, Yi C, Ahmed F, Hossen F, Islam MA, Hossain MA, Siddique N, He C 2021. Bacillus spp. contamination: a novel risk originated from animal feed to human food chains in south-eastern Bangladesh. Front Microbiol 12: 3852. https://doi.org/10.3389/fmicb.2021.783103

Harini R, Yunus HS, Hartono S 2012 Agricultural land conversion: determinants and impact for food sufficiency in Sleman Regency. Indones J Geogr 44(2): 120-133. https://doi.org/10.22146/ijg.2394

Hoffmann MP, Cock J, Samson M, Janetski N, Janetski K, Rötter RP, Fisher M, Oberthür T 2020 Fertilizer management in smallholder cocoa farms of Indonesia under variable climate and market prices. Agric Syst 178: 102759.

Hossain N, Nizamuddin S, Griffin G, Selvakannan P, Mubarak NM, Mahlia TMI 2020 Synthesis and characterization of rice husk biochar via hydrothermal carbonization for wastewater treatment and biofuel production. Sci Rep 10(1): 1-15. https://doi.org/10.1038/s41598-020-75936-3

Imran I. (2021). Unprecedented response of wheat to irrigation levels and various rates of Nano-black carbon. . J. Soil Plant Environ 1(1): 19-37. https://doi.org/10.56946/jspae.v1i1.3

Ismail A, Widiawaty MA, Jupri J, Setiawan I, Sugito NT, Dede M 2022 The influence of free and open-source software-geographic information system online training on spatial habits, knowledge and skills. Geografia Malays J Soc Space 18(1): 118-130. https://doi.org/10.17576/geo-2022-1801-09

Kantikowati E Yusdian Y, Karya DMM, Alia RR 2022 Karakteristik pertumbuhan dan hasil padi (oryza sativa l.) Akibat perlakuan bahan organik dan pupuk hayati. Agro Tatanen 4(1): 15-22. https://doi.org/10.55222/agrotatanen.v4i1.651

Karam DS, Nagabovanalli P, Rajoo KS, Ishak CF, Abdu A, Rosli Z, Muharam FM, Zulperi D 2021 An overview on the preparation of rice husk biochar, factors affecting its properties, and its agriculture application. J Saudi Soc Agric Sci 21(3): 149-159. https://doi.org/10.1016/j.jssas.2021.07.005

Kumar S, Sindhu SS, Kumar R 2021 Biofertilizers: An ecofriendly technology for nutrient recycling and environmental sustainability. Curr Res Microb Sci. 3: 100094. https://doi.org/10.1016/j.crmicr.2021.100094

Major J, Rondon M, Molina D, Riha SJ, Lehmann J 2010 Maize yield and nutrition during 4 years after biochar application to a Colombian savanna oxisol. Plant Soil 333(1): 117-128. https://doi.org/10.1007/s11104-010-0327-0

Masulili A, Utomo WH, Syechfani MS 2010 Rice husk biochar for rice-based cropping system in acid soil 1. The characteristics of rice husk biochar and its influence on the properties of acid sulfate soils and rice growth in West Kalimantan, Indonesia. J Agric Sci 2(1): 39-47. https://doi.org/10.5539/jas.v2n1p39

Mohammadi A, Khoshnevisan B, Venkatesh G, Eskandari S 2020 A critical review on advancement and challenges of biochar application in paddy fields: environmental and life cycle cost analysis. Processes 8(10): 1275. https://doi.org/10.3390/pr8101275

Nguyen BT, Trinh NN, Le CMT, Nguyen TT, Tran TV, Thai BV, Le TV 2018 The interactive effects of biochar and cow manure on rice growth and selected properties of salt-affected soil. Arch. Agron. Soil Sci. 64(12): 1744-1758. https://doi.org/10.1080/03650340.2018.1455186

Nurbayani S, Dede M 2022 The effect of COVID-19 on white-collar workers: The DPSIR model and its semantic aspect in Indonesia. Int J Soc Cult Lang 10(2): 1-16. https://doi.org/10.22034/ijscl.2022.550921.2592

Oladele S, Adeyemo A, Awodun M, Ajayi A, Fasina A 2019 Effects of biochar and nitrogen fertilizer on soil physicochemical properties, nitrogen use efficiency and upland rice (Oryza sativa) yield grown on an Alfisol in Southwestern Nigeria. Int. J. Recycl. Org. Waste Agric. 8(3): 295-308. https://doi.org/10.1007/s40093-019-0251-0

Paiman P, Ardiyanta A, Kusumastuti C, Gunawan S, Ardiani F 2021 Maximizing the rice yield (L.) using NPK fertilizer. Open Agric J 15(1): 33-38. https://doi.org/10.2174/1874331502115010033

Pellejero G, Palacios J, Vela E, Gajardo O, Albrecht L, Aschkar G, Chrorolque A, García-Navarro FJ, Jiménez-Ballesta R 2021 Effect of the application of compost as an organic fertilizer on a tomato crop (Solanum lycopersicum L.) produced in the field in the Lower Valley of the Río Negro (Argentina). Int. J. Recycl. Org. Waste Agric. 10(2): 145-155. https://doi.org/10.30486/ijrowa.2021.1909797.1135

Pérez WA, Torres-Bazurto J 2020 Carbon-nitrogen ratio in soils with fertilizer applications and nutrient absorption in banana (Musa spp.) cv. Williams. Agron Colomb 38(2): 253-260. https://doi.org/10.15446/agron.colomb.v38n2.78075

Petrus HTBM, Putera ADP, Wangi IP, Ramadhian MA, Setiawan H, Prasetya A 2020 Characterization of nitrogen release in modified controlled-release-fertilizer using rice husk biochar. Int J Technol 11(4): 774-783. https://doi.org/10.14716/ijtech.v11i4.3520

Public Health Agency of Canada 2011 Pathogen safety data sheets: infectious substances – Pseudomonas spp. public health agency can. Canadian Government. https://www.canada.ca/en/public-health/services/laboratory-biosafety-biosecurity/pathogen-safety-data-sheets-risk-assessment/pseudomonas.html. Accessed 20 April 2022.

Rafiuddin A, Widiatmaka W, Munibah K 2016 Land use change pattern and the balance of food production in Karawang District. J Ilmu Tanah Lingkung 18(1): 15-20. https://doi.org/10.29244/jitl.18.1.15-20

Rajput R, Pokhriya P, Panwar P, Arunachalam A, Arunachalam K 2019 Soil nutrients, microbial biomass, and crop response to organic amendments in rice cropping system in the Shiwaliks of Indian Himalayas. Int. J. Recycl. Org. Waste Agric. 8(1): 73-85. https://doi.org/10.1007/s40093-018-0230-x

Sahim AN, Mat NKN, Sudarmana E 2018 The power of innovation, distribution and supervision factor in improving performance of supply chain management of subsidized fertilizer in Indonesia. Int J Supply Chain Manag 7(1): 129-134.

Shetty R, Prakash NB 2020 Effect of different biochars on acid soil and growth parameters of rice plants under aluminium toxicity. Sci Rep 10(1): 12249. https://doi.org/10.1038/s41598-020-69262-x

Singh B 2018. Rice husk ash. In: Waste and Supplementary Cementitious Materials in Concrete. R. Siddique and P. Cachim (Eds.). Woodhead Publishing, London.

Sunardi S, Nursamsi I, Dede M, Paramitha A, Arief MCW, Ariyani M, Santoso P 2022 Assessing the influence of land-use changes on water quality using remote sensing and GIS: A study in Cirata Reservoir, Indonesia. Sci Technol Indones 7(1): 106-114. https://doi.org/10.26554/sti.2022.7.1.106- 114

Susiati H, Dede M, Widiawaty MA, Ismail A, Udiyani PM 2022 Site suitability-based spatial-weighted multicriteria analysis for nuclear power plants in Indonesia. Heliyon 8(3): e09088. https://doi.org/10.1016/j.heliyon.2022.e09088

Sy TN, Van HT, Huu NC, Van NC, Mitsunori T 2021 Rice husk and melaleuca biochar additions reduce soil CH 4 and N 2O emissions and increase soil organic matter and nutrient availability. F1000Research 10: 1128. https://doi.org/10.12688/f1000research.74041.2

Uchimiya M, Pignatello JJ, White JC, Hu ST, Ferreira PJ 2017 Structural transformation of biochar black carbon by C60 superstructure: Environmental implications. Sci Rep 7(1): 11787. https://doi.org/10.1038/s41598-017-12117-9

Ullah S, Liang H, Ali I, Zhao Q, Iqbal A, Wei S, Shah T, Yan B, Jiang L 2020 Biochar coupled with contrasting nitrogen sources mediated change s in carbon and nitrogen pools, microbial and enzymatic activity in paddy soil. J Saudi Chem Soc 24(11): 835-849. https://doi.org/10.1016/j.jscs.2020.08.008

Varela-Milla O, Rivera EB, Huang WJ, Chien C, Wang YM 2013 Agronomic properties and characterization of rice husk and wood biochars and their effect on the growth of water spinach in a field test. J Soil Sci Plant Nutr 13(2): 251-266. https://doi.org/10.4067/S0718-95162013005000022

Walianggen A 2022 Biochar rice husk charcoal on growth and production of long bean plants (Vigna sinensis l.): Formulation analysis. Agaricus Adv. Agric. Sci. Farming 2(1): 1-6. http://dx.doi.org/10.5539/jas.v2n1p39

Ye T, Li Y, Zhang J, Hou W, Zhou W, Lu J, Xing Y, Li X 2019 Nitrogen, phosphorus, and potassium fertilization affects the flowering time of rice (Oryza sativa L.). Glob Ecol Conserv 20: e00753. https://doi.org/10.1016/j.gecco.2019.e00753

Ye Y, Liang X, Chen Y, Li L, Ji Y, Zhu C 2014 Carbon, nitrogen and phosphorus accumulation and partitioning, and C: N: P stoichiometry in late-season rice under different water and nitrogen managements. PloS One 9(7): e101776. https://doi.org/10.1371/journal.pone.0101776

Yu L, Yu M, Lu X, Tang C, Liu X, Brookes PC, Xu J 2018 Combined application of biochar and nitrogen fertilizer benefits nitrogen retention in the rhizosphere of soybean by increasing microbial biomass but not altering microbial community structure. Sci Total Environ 640: 1221-1230. https://doi.org/10.1016/j.scitotenv.2018.06.018

Zhang Q, Liu X, Yu G, Duan B, Wang H, Zhao H, Feng D, Gu M, Liu L 2022a Reasonable nitrogen regime in the main crop increased grain yields in both main and ratoon rice. Agriculture 12(4): 527. https://doi.org/10.3390/agriculture12040527

Zhang H, Ullah F, Ahmad R, Shah SUA, Khan A, Adnan M 2022b Response of soil proteobacteria to biochar amendment in sustainable agriculture-a mini review. J. Soil Plant Environ. 1(2): 16-30. https://doi.org/10.56946/jspae.v1i2.56

Submit artikel versi revisi sesuai hasil review tahap 1 (09 April 2023)

Gmail — Nana Danapriatna <danapriatna.nana@gmail.com>

Revised submission received for Cogent Food & Agriculture (Submission ID: 231870827.R1)

1 pesan

agriculture@cogentoa.com <agriculture@cogentoa.com> — 9 April 2023 pukul 18.06

Kepada: danapriatna.nana@gmail.com

Taylor & Francis
Taylor & Francis Group

Dear Nana Danapriatna,

Thank you for submitting your revised manuscript.

Submission ID	**231870827**
Manuscript Title	**Application of Biochar and Biological Fertilizer to Improve Soil Quality and Oryza sativa L. Productivity**
Journal	**Cogent Food & Agriculture**

You can check the progress of your submission, and make any requested revisions, on the Author Portal.

Thank you for submitting your work to our journal.
If you have any queries, please get in touch with agriculture@cogentoa.com.

Kind Regards,
Cogent Food & Agriculture Editorial Office

Artikel telah accepted (09 April 2023)

Gmail

Nana Danapriatna <danapriatna.nana@gmail.com>

231870827 (Cogent Food & Agriculture) Your submission has been accepted

2 pesan

Cogent Food and Agriculture <em@editorialmanager.com> 22 April 2023 pukul 15.24
Balas Ke: Cogent Food and Agriculture <agriculture@cogentoa.com>
Kepada: Nana Danapriatna <danapriatna.nana@gmail.com>

Ref: COGENTAGRI-2023-0141R1
231870827
Application of Biochar and Biological Fertilizer to Improve Soil Quality and Oryza sativa L. Productivity
Cogent Food & Agriculture

Dear Nana Danapriatna,

I am pleased to tell you that your work was accepted for publication in Cogent Food & Agriculture on Apr 22, 2023.

Please note: only minor, or typographical changes can be introduced during typesetting and proofing of your manuscript. Major changes to your manuscript will not be permitted.

For your information, comments from the Editor and Reviewers can be found below if available, and you will have an opportunity to make minor changes at proof stage.

Your article will be published under the Creative Commons Attribution license (CC-BY 4.0), ensuring that your work will be freely accessible by all. Your article will also be shareable and adaptable by anyone as long as the user gives appropriate credit, provides a link to the license, and indicates if changes were made.

Once the version of record (VoR) of your article has been published in Cogent Food & Agriculture, please feel free to deposit a copy in your institutional repository.

Thank you for submitting your work to this journal, and we hope that you will consider us for your future submissions.

Best wishes

Manuel Tejada Moral
Editor-in-Chief
Cogent Food & Agriculture

Comments from the Editors and Reviewers:

Do you want to get recognition for this review on Publons?</p><p><i> Don't let your reviewing work go unnoticed! Researchers the world over use Publons to effortlessly track their valuable peer review contributions for any journal. If you opt in, your Publons profile will automatically be updated to show a verified record of this review in full compliance with the journal's review policy. If you don't have a Publons
profile, you will be prompted to create a free account. [Learn
more]</i></p>

Reviewer 1: Yes

Title, Abstract and Introduction – overall evaluation
Reviewer 1: Sound

Methodology / Materials and Methods – overall evaluation
Reviewer 1: Sound

Objective / Hypothesis – overall evaluation
Reviewer 1: Sound

Figures and Tables – overall evaluation
Reviewer 1: Sound

Results / Data Analysis – overall evaluation
Reviewer 1: Sound

Interpretation / Discussion – overall evaluation
Reviewer 1: Sound

Conclusions – overall evaluation
Reviewer 1: Sound

References – overall evaluation
Reviewer 1: Sound

Compliance with Ethical Standards – overall evaluation
Reviewer 1: Sound

Writing – overall evaluation
Reviewer 1: Sound

Supplemental Information and Data – overall evaluation
Reviewer 1: Sound

Comments to the author
Reviewer 1: Dear Authors,

The manuscript is significantly improved and I have reviewed the revised manuscript and I am pleased to see that you have addressed many of the issues that I had raised. Therefore, I believe that your manuscript is now suitable for publication.

Do you want to get recognition for this review on Publons?</p><p><i> Don't let your reviewing work go unnoticed! Researchers the world over use Publons to effortlessly track their valuable peer review contributions for any journal. If you opt in, your Publons profile will automatically be updated to show a verified record of this review in full compliance with the journal's review policy. If you don't have a Publons
profile, you will be prompted to create a free account. [Learn more]</i></p>

Reviewer 3: Yes

Title, Abstract and Introduction – overall evaluation
Reviewer 3: Sound

Methodology / Materials and Methods – overall evaluation
Reviewer 3: Sound

Objective / Hypothesis – overall evaluation
Reviewer 3: Outstanding

Figures and Tables – overall evaluation
Reviewer 3: Outstanding

Results / Data Analysis – overall evaluation
Reviewer 3: Sound

Interpretation / Discussion – overall evaluation
Reviewer 3: Sound

Conclusions – overall evaluation
Reviewer 3: Sound

References – overall evaluation

Reviewer 3: Sound

Compliance with Ethical Standards – overall evaluation
Reviewer 3: Sound

Writing – overall evaluation
Reviewer 3: Sound

Supplemental Information and Data – overall evaluation
Reviewer 3: Sound

Comments to the author
Reviewer 3: Appreciable work.

COGENTAGRI-2023-0141_R1 (1).pdf
1327K

Persetujuan untuk publikasi (24 April 2023)

Gmail **Nana Danapriatna <danapriatna.nana@gmail.com>**

Cogent Food & Agriculture - Please complete your author agreement
1 pesan

---

authoragreement@taylorandfrancis.com <authoragreement@taylorandfrancis.com> 24 April 2023 pukul 22.58
Kepada: danapriatna.nana@gmail.com

cogent oa

Your Author Publishing Agreement (APA) with Taylor and Francis

Attention: Nana Danapriatna

Hello,

In order to publish your article, "Application of Biochar and Biological Fertilizer to Improve Soil Quality and Oryza sativa L. Productivity", we ask that you complete your Author Publishing Agreement. Please click the link below (or copy the URL into your browser) to launch our online Author Publishing Agreement portal. The process should take only a few minutes. In most cases, you will receive immediate notice that your agreement is accepted and will be able to download a copy of it for your records.

Please do not reply to this email. If you need immediate assistance concerning your article, please instead contact OAFA-production@journals.tandf.co.uk.

Thank you.

Start »

https://authoragreement.taylorandfrancisgroup.com/Start/c2941ca4-0196-447f-a5fd-84f1020e75d5

Copyediting (26 April 2023)

Gmail — Nana Danapriatna <danapriatna.nana@gmail.com>

Author corrections submitted for Manuscript ID: OAFA A 2207416

1 pesan

iauthorsupport@integra.co.in <iauthorsupport@integra.co.in> — 26 April 2023 pukul 23.28

Kepada: danapriatna.nana@gmail.com

Cc: annie.sophia@integra.co.in

Manuscript Title: OAFA - (Application of Biochar and Biological Fertilizer to Improve Soil Quality and Oryza sativa L. Productivity)

Manuscript DOI: 10.1080/23311932.2023.2207416

Journal: OAFA-Cogent Food & Agriculture

Date proof corrections submitted: 26 April 2023

Dear Nana Danapriatna,

This email confirms that you have submitted corrections to your proofs via the Taylor & Francis online proofing system. Your record of corrections are now available using the Taylor & Francis online proofing system.

Click here

If any of this information is incorrect, please contact the Production Editor: Annie Sophia

Email: OAFA-production@journals.tandf.co.uk

Thank you.

Yours sincerely,

Taylor & Francis Online Proofing Team

Artikel tayang online (01 Mei 2023)

Taylor & Francis Online — Browse | Search | Publish | Login | Register

Home ▶ All Journals ▶ Cogent Food & Agriculture ▶ List of Issues ▶ Volume 9, Issue 1 ▶ Application of biochar and biological fe ....

Cogent Food & Agriculture ›

Volume 9, 2023 - Issue 1

Submit an article | Journal homepage

Enter keywords, authors, DOI, etc | This Journal | Advanced sea

1,707 Views | 2 CrossRef citations to date | 1 Altmetric

Listen

Open access

SOIL & CROP SCIENCES

Application of biochar and biological fertilizer to improve soil quality and *Oryza sativa* L. productivity

Nana Danapriatna, Ismarani Ismarani & Moh. Dede

Article: 2207416 | Received 06 Feb 2023, Accepted 22 Apr 2023, Published online: 01 May 2023

Cite this article | https://doi.org/10.1080/23311932.2023.2207416 | Check for updates

Full Article | Figures & data | References | Citations | Metrics | Licensing | Reprints & Permissions

View PDF | View EPUB

In this article

Bukti proses submit di author dashboard (02 Mei 2023)

Taylor & Francis Group
an informa business

Hi, Nana

My Articles

SUBMIT NEW MANUSCRIPT

SUBMISSION	TITLE	JOURNAL	STATUS	CHARGES
231870827	Application of Biochar and Biological Fertiliz...	Cogent Food & Agriculture	Accepted	Paid

SUBMISSION

PEER REVIEW

07 February 2023	With Editor	
07 February 2023	Out for Review	
10 March 2023	Reviews Complete	
12 March 2023	Decision Pending	
14 March 2023	Revision Required	
09 April 2023	Revision Incomplete	
09 April 2023	Revised Manuscript Submitted	
09 April 2023	With Journal Administrator	
10 April 2023	With Editor	
11 April 2023	Out for Review	
21 April 2023	Reviews Complete	
22 April 2023	Decision Pending	
22 April 2023	Accepted	Download Invoice

Profil Scimago/Scopus Jurnal dan Bukti Indeksasi Artikel

Cogent Food and Agriculture

COUNTRY	SUBJECT AREA AND CATEGORY	PUBLISHER	H-INDEX
United Kingdom Universities and research institutions in United Kingdom Media Ranking in United Kingdom	Agricultural and Biological Sciences – Agricultural and Biological Sciences (miscellaneous) – Food Science	Informa Healthcare	44
PUBLICATION TYPE	**ISSN**	**COVERAGE**	**INFORMATION**
Journals	23311932	2015-2023	Homepage How to publish in this journal agriculture@cogentoa.com

SCOPE

Cogent Food & Agriculture, is a multidisciplinary open access journal, publishing scientifically sound peer-reviewed research, including replication studies, in food, nutrition, veterinary and agricultural sciences. The journal provides a fast, flexible and reliable option for open access publishing, helping authors share their work across disciplines and with a global audience. Our Editors, each a specialist in their subject area, assess manuscripts objectively and fairly and provide quality, constructive and timely peer review. Rather than accepting manuscripts based on their level of importance or impact, editors assess manuscripts objectively, accepting valid, scientific research with sound rigorous methodology. Article-level metrics let the research speak for itself.

Scopus

1 of 1

Download Print Save to PDF Save to list Create bibliography

Cogent Food and Agriculture • Open Access • Volume 9, Issue 1 • 2023 • Article number 2207416

Document type
Article • Gold Open Access

Source type
Journal

ISSN
23311932

DOI
10.1080/23311932.2023.2207416

View more

Application of biochar and biological fertilizer to improve soil quality and Oryza sativa L. productivity

Danapriatna, Nana[a] ;
Ismarani, Ismarani[a]; Dede, Moh.[b, c, d, e]
Save all to author list

[a] Faculty of Agriculture, Universitas Islam 45 Bekasi, West Java, Bekasi City, Indonesia
[b] Doctoral Program on Environmental Science, Postgraduate School (SPS), Universitas Padjadjaran, West Java, Bandung City, Indonesia
[c] Cakrabuana Institute for Geoinformation, Environment and Social Studies (CIGESS), Cirebon Regency, West Java, Indonesia
[d] Directorate for Development Policy, National Research and Innovation Agency of Indonesia (BRIN), DKI Jakarta, Jakarta Pusat, Indonesia
View additional affiliations