PAPER NAME

MIGRATION LETTER.docx

AUTHOR

Suswadi suswadi

WORD COUNT

5960 Words

CHARACTER COUNT

38742 Characters

PAGE COUNT

12 Pages

FILE SIZE

40.9KB

SUBMISSION DATE

Jan 17, 2024 2:53 PM GMT+7

REPORT DATE

Jan 17, 2024 2:54 PM GMT+7

18% Overall Similarity

The combined total of all matches, including overlapping sources, for each database.

- 14% Internet database
- 11% Publications database
- Crossref database
- Crossref Posted Content database
- 11% Submitted Works database

Excluded from Similarity Report

- Bibliographic material
- Manually excluded sources

Migration Letters

Volume: 20, No: S8(2023), pp. 316-327

ISSN: 1741-8984 (Print) ISSN: 1741-8992 (Online)
www.migrationletters.com

Optimizing the Implementation of Standard Operating Procedure-Good Agriculture Practice for Organic Rice Farming

Suswadi[1], Agung Prasetyo[2], Kusriani Prasetyowati[3]

Abstract

The increase of organic rice consumption arises as people are increasingly concerned about healthy food consumption. A standardized organic food supply is needed to fulfill the need of food. This paper aimed to find out the level of implementation of Standard Operating Procedure-Good Agriculture Practice (SOP-GAP) for organic rice farming and the correlation between the implementation of SOP-GAP for organic rice farming and the increase of organic rice production in Indonesia with categorization and correlation analysis. The research location was determined by purposive sampling. A sample of farmers as the respondent was conducted with Snowball sampling. The research results show that the implementation of Standard Operating Procedure-Good Agriculture Practice (SOP-GAP) for organic rice farming in Indonesia is very high. There are nine sub-aspects of SOP-GAP that correlate with and significantly affect organic rice production, namely land suitability, seedling, pesticides, equipment, soil cultivation, irrigation, plant maintenance, and PDO (Plant Disturbing Organisms) control, and post-harvest. There are four sub-aspects of SOP-GAP that do not correlate with and have no significant effect on increasing organic rice production: fertilizer and fertilization, planting, and harvesting. In this case, efforts are needed to increase the use of quality fertilizers and planting buffer plants in farming.

Keywords: *organic, rice, correlation, optimizing, adoption.*

Introduction

Nowadays, People's cares more about health because it considers health as a valuable asset [1]. One determinant of physical and mental health is daily food consumption [2]. The current world development related to health issues is the transfer of food consumption from non-organic to organic food [3–5]. Organic food products are produced from organic farming, a production system that maintains soil, ecosystem, and human health [6,7]. This condition also occurs in Indonesia. Rice, which is a staple food produced from non-organic rice, experienced shifting of consumer demand towards organic rice consumption [8]. Organic rice is a food produced by organic rice farming [9]. Organic rice is believed to be safer [10–13]because it is a natural food produced without the use of chemicals and artificial fertilizers [14–16].

Organic rice farming is one option to produce quality food while improving agricultural resources, especially the quality of soil, waters and biodiversity[17–20]. The benefits of

[1] Department of Agribusiness, Faculty of Agriculture, Universitas Tunas, Pembangunan, Jl. Balekambang Lor No. 1, Surakarta, Central Java, suswadi@lecture.utp.ac.id
[2] Department of Agribusiness, Faculty of Agriculture, Universitas Tunas, Pembangunan, Jl. Balekambang Lor No. 1, Surakarta, Central Java
[3] Department of Agribusiness, Faculty of Agriculture, Universitas Tunas, Pembangunan, Jl. Balekambang Lor No. 1, Surakarta, Central Java

organic farming have been demonstrated by organic farming systems that are integrated [21], economical[22,23], eco-friendly, and improve public health [24–26]. In 2010, there were only 2,970 hectares of rice fields implementing the organic system in Indonesia, this figure increased to 53,974 Hectares in 2018 [27]. The implementation of organic farming that has begun since a long time ago should make farmers experienced in implementing Standard Operating Procedure-Good Agriculture Practice (SOP-GAP) for organic rice farming [28]. For the farmer that newly convert to organic farming, the adoption of SOP-GAP organic its not easy to deal. Farmers have different awareness and understanding on the SOP, especially when farmer just convert their land to organic. The difference in thoughts make different results in each process of organic rice production; for example in making organic fertilizers, some farmers apply starter bacteria from manure as recommended by SOP-GAP while some others only wait for the manure to dry after three months[29,30]. This problem may be the cause of differences in the production yields of organic rice farmers. Optimization by adjusting with SOP-GAP in each implementation of farming activities is needed in order to increase production yields and improve the cultivation quality of farmers [30].

This research aimed to find out the level of implementation of SOP-GAP for organic rice farming and the correlation between the implementation of SOP-GAP for organic rice farming and the increase of organic rice production in Indonesia. Research on the evaluation of SOP-GAP for organic rice was carried out by several researcher in Indonesia. The research conducted only focused on the factors that determine the farmers' decision to implement SOP-GAP in organic farming in various regency (Ponorogo [31] and Boyolali [32,33]).

Methods

The descriptive research on the evaluation of SOP-GAP for organic rice farming in Indonesia was conducted using survey method. The research location was determined by purposive sampling by selecting the main centre for developing organic rice in Indonesia (Sragen Regency, Boyolali Regency, Bantul regency and Wonogiri Regency). Sampling of farmers was conducted with random sampling. Total respondent were 321 organic farmer that newly convert their land to organic farming. The effect of implementing SOP-GAP in optimizing yields was tested by using Spearman’s rank correlation analysis [34–37]. The implementation is based on the Indonesian National Standardization Agency on Organic Farming Systems. The implementation includes aspects of providing inputs [land, seedling, fertilizers, pesticide, and equipment) and cultivation techniques (soil cultivation, planting, fertilizing, irrigation, plant maintenance, PDO control, and post-harvest [38]. The variable of the implementation of SOP-GAP for organic rice farming is measured as follows:

1. The level of implementation is the intensity of the suitability of cultivation technique implementation with standard requirements seen from the frequency of suitability of the implementation carried out by farmers, measured by scores: 0 for never implementing SOP-GAP, 1 for rarely, 2 for occasionally, 3 for frequently, and 4 for always.
2. Optimization of organic rice production which is influenced by the implementation of SOP-GAP for organic rice farming is calculated by changes in rice production after the implementation of SOP-GAP. Changes in production yields were calculated by comparing the latest production yield of the third planting season (MT) in 2018 with that of the third MT in 2017. The production increase score was determined by measuring the percentage of production changes in the third MT in 2018 against the third MT in 2017. The scoring criteria are determined as follows: 0 for production changes of less than or equal to 0, 1 for production changes of 0 - 5%, 2 for production changes of

5% - 10%, 3 for production changes of 10% - 15%, and 4 for production changes greater than 15%. This division is based on the findings of Berkhout [39] and Chanda [40].

The level of implementation of SOP-GAP was analyzed by categorizing the level of implementation of SOP-GAP for organic rice farming. The level categorization was carried out using equation (1):

$$\text{Interval} = \frac{\text{Highest Score} - \text{Lowest Score}}{\text{Number of Score Category}}$$

If the score of SOP-GAP implementation is 0-10.4, then the implementation is very low. If the score is 10.41-20.8, the implementation is low. If the score is 20.81-31.2, the implementation is moderate. If the score is 31.21-41.6, then the implementation is high, and if the score is higher than 41.61, it means that the implementation is of very high value.

The testing of correlation (relationship) between production changes (Y) and the implementation of aspects in SOP-GAP for organic rice farming (X) was carried out by calculating Spearman's rank correlation coefficient as in the following equation (2):

$$Rs = 1 - \frac{6\sum d^2}{n^3 - n}$$

Note:

Rs : Spearman's Rank Correlation Coefficient

d : Difference between x and y

n : Number of sample

Rs value must not be equal to 0, in order to show the correlation between production changes and the level of implementation of aspects in SOP-GAP for organic rice farming. Rs value can show a negative or positive correlation with y variable.

t-test was used to find out whether there was a real correlation or not between production changes (Y) and the level of implementation of aspects in SOP-GAP for organic rice farming (X). T-test formula is illustrated in equation (3):

$$t = \sqrt{\frac{n-2}{1-Rs^2}} \qquad (3)$$

Note:

t : number of t

Rs : Spearman-Rank Correlation Coefficient

n : Number of Sample

If the value of t is greater than t table, then there is a correlation between the level of implementation of aspects in SOP-GAP for organic rice farming (X) and production changes (Y).

Results And Discussion

Level of Implementation of SOP-GAP for Organic Rice Farming in Indonesia

Organic rice farmers in Indonesia in general have implemented the aspects and sub-aspects in SOP-GAP for organic rice farming. Based on the criteria for achieving the implementation of SOP-GAP for organic rice farming, the level of implementation of SOP-GAP for organic rice farming in Boyolali District is 66.7% while the high and moderate levels of implementation are 23.3% and 10% each, of the total respondents. The average score for the implementation of the SOP is 43.3, so in general the level of the implementation is very high. This condition naturally occurs when most farmers have more than 10 years of farming experience. The experience accumulated in everyday life makes organic farmers accustomed to implementing SOP-GAP. They are also aware of the benefits of organic farming in relation to their income, health, and sustainable environment.

Correlation between the Implementation of SOP-GAP for Organic Rice Farming and the Increase of Organic Rice Production in Indonesia

The implementation SOP-GAP for organic rice farming comprises of input preparation aspects and cultivation stages. The following is the correlation between the increase of organic rice production and each sub-aspect in the aspects of the SOP with Spearman's Rank analysis.

Table 1. Correlation of Aspects and Sub-Aspects of SOP-GAP with the Increase of Organic Rice Production in Indonesia

SOP-GAP Aspects	SOP-GAP Sub-Aspects	Correlation Coefficient	Criteria
Production Input Procurement	Land	0.495**	Significant
	Seedling	0.737**	Significant
	Fertilizer	0,355	Insignificant
	Pesticide	0,452.	Significant
	Equipment	0.758**	Significant
Cultivation Techniques	Land Cultivation	0,441.	Significant
	Planting	0,344	Insignificant
	Fertilization	0,355	Insignificant
	Irrigation	0,463.	Significant
	Plan Maintenance	0,430.	Significant
	PDO Control	0,377.	Significant
	Harvesting	0,134	Insignificant
	Post-Harvest	0.539**	Significant

Source: Primary data analysis, 2019

Note: *real with 95% of degree of confidence, **real with 99% of degree of confidence.

The nine sub-aspects, land suitability, seedling, pesticides, equipment, soil cultivation, irrigation, plant maintenance, PDO control, and post-harvest, are correlated and have a significant effect on the increase of organic rice production in Indonesia. This finding is in accordance with the research conducted by Kornginnaya [41], Adnan [42], and Walisinghe et al. [43]. There are only four factors that are not correlated and have no significant effect on the increase of organic rice production, namely fertilizer and fertilization, planting, and harvesting.

Discussion of the Result

Production Input Procurement

The correlation between land suitability and the increase of organic rice production obtained Rs value of 0.495 and moves to the positive. The correlation can be interpreted that the level of implementation of the land suitability sub-aspect in Indonesia strongly associated with the increase of organic rice production. This is because organic rice farming land in Sragen, Boyolali, Bantul and Wonogiri Regency, Indonesia is located in the uppermost of hilly area, so it is free from chemical contamination. The land of the research has been managed organically since the early 2000s, so that it is quite fertile. The research location has passed the conversion period, according to the Indonesian National Standardization Agency. The conversion period for paddy was two years[44,45]. If the paddy has passed though the conversion period, it can be declared as an organic product[46,47]. The sub-aspect which has a strong correlation with input procurement to the increase of production, in addition to land suitability, is the sub-aspect of pesticides (Rs value of 0.452). Organic rice farmers do not use pesticides from chemicals and genetic engineering products[48–56]. The pesticides used are from plants, so that they fulfil the requirements for organic rice [57–59].

The correlation between seedling and the increase of organic rice production obtained Rs vale of 0.737 moving towards the positive, meaning that the level of implementation of seedling sub-aspect is strongly associated with the increase of organic rice production. Farmers generally use their own production seedling[60–63]. Farmers have never bought seedling from genetic engineering products (GMOs). Strong correlation moving towards the positive is also indicated by equipment sub-aspect (Rs value of 0.758]. The farming equipment used by the farmers was traditional equipment that is safe for the environment as it is not contaminated with chemicals[64–67].

Fertilizers and fertilization in organic farming play a role in providing safe nutrients and do not pollute the environment with hazardous residues. There is no correlation between the implementation of fertilizers and fertilizing sub-aspects with the increase of organic rice production. Despite the application of organic fertilizers, the method and dosage of the fertilizers are considered to be not optimal. The process of making organic fertilizers from manure through fermentation was not optimal either [68–73]. This resulted in the increase of production that is not optimal.

Cultivation Techniques

It is prohibited to prepare organic farming land by burning to prevent land degradation (erosion, sanitation, etc. [74–77]. The correlation between soil cultivation sub-aspect and the increase of organic rice production obtained Rs value 0.441 moving to the positive. It implies that the level of implementation of soil cultivation aspect in Indonesia is strongly associated with the increase of organic rice production. The land in Boyolali hills is cultivated using a terracing system that prevents erosion. Soil cultivation also uses environmentally friendly equipment such as traditional tools. In addition to soil cultivation, there are variables that correlate quite strongly with the increase of organic rice production in Indonesia, namely irrigation (Rs value of 0.463), plant maintenance (Rs value of 0.430), and PDO control (Rs value of 0.377). Water at the research location is available throughout the year and sourced from springs that are kept clean. Irrigation with good availability and quality can increase organic farming production. Plant maintenance (weed cleaning) was carried out by pulling the weed by hand so that it is guaranteed to be safe for the environment [78,79]. Land that is clean of weeds is able to increase paddy growth optimally. The process of controlling plant disturbing organisms (PDO) must take into account the potential impacts that can disrupt the biotic and abiotic environment and consumer health. Organic rice farmers have carried out methods of controlling pests properly and followed preventive recommendations in implementing PDO control. Biological pesticides were applied to get rid of stink bugs and planthoppers. The good habit of organic farmers in Indonesia is to directly kill pests by hand as soon as they see them in their farming fields. They also allow pest-eating insects on their farming land [80–82]. Such method ensures that organic rice production does not experience much production loss due to PDO attacks.

There is no correlation between planting and harvesting sub-aspects with the increase of organic rice production in Indonesia. Planting method using hands makes farmers' rice products free from chemical contamination. They have planted buffer plants around organic rice plants with a minimum width of two meters to avoid pollution from non-organic land [83–85]. As a crop rotation, the farmers usually plant organic rice with different varieties in turns. The most important thing to harvest organic products is not to damage and pollute the farming environment. The harvesting method will not increase production because good and right way of harvesting only reduces the potential production yield loss due to harvest loses. Post-harvest is strongly correlated with the increase of organic rice production (Rs value of 0.539 to positive). The integrity of organic food products must be maintained throughout the food chain stages from harvesting to packaging. Post-processing by farmers used appropriate and careful ways to minimize the use of chemicals. The integrity maintained in the post-harvest makes consumers believe in organic products and want to continue to consume them. This desire makes the demand for organic products even greater and influences farmers' decisions to increase the production of their organic rice farming, in addition to the price of organic rice than is higher than that of conventional rice.

Conclusion

The main finding in this research is that the level of implementation of SOP-GAP for Organic Rice Farming in Indonesia is very high. There are nine sub-aspects of SOP-GAP that are correlated and have a significant effect on the increase of organic rice production in Indonesia. The nine sub-aspects are land suitability, seedling, pesticides, equipment, soil cultivation, irrigation, plant maintenance, PDO control, and post-harvest. There are four factors that are not correlated and have no significant effect on the increase of organic rice production, namely fertilizer and fertilization, planting, and harvesting. It is necessary to increase the intensity of some sub-aspects of organic rice farming. The application of organic fertilizer needs to be increased in terms of quantity and quality. The making of organic fertilizers must use the recommended micro-organisms. Planting buffer plants needs to be carried out to maintain the quality of organic rice. This research is limited to the application of SOP-GAP. Further research is needed to determine the factors that influence farmers' decisions in implementing SOP-GAP.

Acknowledgments

We would like to thank all the stakeholders who help us with the design of the questionnaire
and its implementation as prof. Endang S.R. (Universitas Sebelas Maret). We would like to thank to LPPM UTP about the financial support to publish the article.

We also thank the reviewers whose comments and suggestions allowed our work to be improved.

Conflict of interest

The authors declare no conflict of interest.

References

1. Sakolwitayanon H, Soni P, Damien J. Attributes determining consumer preference for organic rice in Bangkok, Thailand. British Food Journal [Internet]. 2018 Jan 1;120(9):2017–32. Available from: https://doi.org/10.1108/BFJ-12-2017-0667

2. Xu P, Su H, Lone T. Chinese consumers' willingness to pay for rice. Journal of Agribusiness in Developing and Emerging Economies [Internet]. 2018 Jan 1;8(2):256–69. Available from: https://doi.org/10.1108/JADEE-11-2016-0077

3. Mariyono J. Green revolution- and wetland-linked technological change of rice agriculture in Indonesia. Management of Environmental Quality: An International Journal [Internet]. 2015 Jan 1;26(5):683–700. Available from: https://doi.org/10.1108/MEQ-07-2014-0104
4. Sriwaranun Y, Gan C, Lee M, Cohen DA. Consumers’ willingness to pay for organic products in Thailand. International Journal of Social Economics [Internet]. 2015 Jan 1;42(5):480–510. Available from: https://doi.org/10.1108/IJSE-09-2013-0204
5. Mariyono J. Profitability and Determinants of Smallholder Commercial Vegetable Production. International Journal of Vegetable Science [Internet]. 2018;24(3):274–88. Available from: https://doi.org/10.1080/19315260.2017.1413698
6. Ditlevsen K, Sandøe P, Lassen J. Healthy food is nutritious, but organic food is healthy because it is pure: The negotiation of healthy food choices by Danish consumers of organic food. Food Quality and Preference [Internet]. 2019;71:46–53. Available from: https://www.sciencedirect.com/science/article/pii/S0950329318304373
7. Popa ME, Mitelut AC, Popa EE, Stan A, Popa VI. Organic foods contribution to nutritional quality and value. Trends in Food Science & Technology [Internet]. 2019;84:15–8. Available from: https://www.sciencedirect.com/science/article/pii/S0924224417303679
8. Moslehpour M, Van Kien P, Danyfisla I. Differences of customer purchase behavior toward organic rice in Indonesia and Taiwan. International Journal of Quality and Service Sciences [Internet]. 2014 Jan 1;6(4):348–68. Available from: https://doi.org/10.1108/IJQSS-04-2013-0024
9. Baležentis T, Galnaitytė A, Namiotko V, Novickytė L, Chen X. Are there enough stimuli to develop sustainable farming in Lithuania? Management of Environmental Quality: An International Journal [Internet]. 2019 Jan 1;30(3):643–56. Available from: https://doi.org/10.1108/MEQ-09-2018-0160
10. My NHD, Van Loo EJ, Rutsaert P, Tuan TH, Verbeke W. Consumer valuation of quality rice attributes in a developing economy. British Food Journal [Internet]. 2018 Jan 1;120(5):1059–72. Available from: https://doi.org/10.1108/BFJ-05-2017-0277
11. Xie B, Wang L, Yang H, Wang Y, Zhang M. Consumer perceptions and attitudes of organic food products in Eastern China. British Food Journal [Internet]. 2015 Jan 1;117(3):1105–21. Available from: https://doi.org/10.1108/BFJ-09-2013-0255
12. Stanton J V, Guion DT. Consumer attitudes toward organic foods: An exploration of U.S. market segments. In: Belk RW, editor. Research in Consumer Behavior [Internet]. Emerald Group Publishing Limited; 2010. p. 5–41. (Research in Consumer Behavior; vol. 12). Available from: https://doi.org/10.1108/S0885-2111(2010)0000012004
13. Amfo B, Ansah IGK, Donkoh SA. The effects of income and food safety perception on vegetable expenditure in the Tamale Metropolis, Ghana. Journal of Agribusiness in Developing and Emerging Economies [Internet]. 2019 Jan 1;9(3):276–93. Available from: https://doi.org/10.1108/JADEE-07-2018-0088
14. Ma W, Ma C, Su Y, Nie Z. Organic farming. China Agricultural Economic Review [Internet]. 2017 Jan 1;9(2):211–24. Available from: https://doi.org/10.1108/CAER-05-2016-0070
15. Nazirah L, Purba E, Hanum C, Rauf A. Effect of soil tillage and mycorrhiza application on growth and yields of upland rice in drought condition. Asian Journal of Agriculture and Biology. 2018;
16. Yanakittkul P, Aungvaravong C. A model of farmers intentions towards organic farming: A case study on rice farming in Thailand. Heliyon [Internet]. 2020;6(1):e03039. Available from: https://www.sciencedirect.com/science/article/pii/S2405844019366988
17. Jokinen P. The European union as a suprastate in agri-environmental issues: The Finnish perspective. In: Mol APJ, Buttel FH, editors. The Environmental State Under Pressure [Internet]. Emerald Group Publishing Limited; 2002. p. 105–20. (Research in Social Problems and Public Policy; vol. 10). Available from: https://doi.org/10.1016/S0196-1152(02)80009-6

18. Mondelaers K, Aertsens J, Van Huylenbroeck G. A meta-analysis of the differences in environmental impacts between organic and conventional farming. van Huylenbroek G, Mondelaers K, Aertsens J, editors. British Food Journal [Internet]. 2009 Jan 1;111(10):1098–119. Available from: https://doi.org/10.1108/00070700910992925

19. Lanka S V, Khadaroo I, Böhm S. Agroecology accounting: biodiversity and sustainable livelihoods from the margins. Accounting, Auditing & Accountability Journal [Internet]. 2017 Jan 1;30(7):1592–613. Available from: https://doi.org/10.1108/AAAJ-12-2015-2363

20. Freyer B, Bingen J. Organic and Non-Organic Farming: Is Convergence Possible? In: Alternative Agrifood Movements: Patterns of Convergence and Divergence [Internet]. Emerald Group Publishing Limited; 2014. p. 281–310. (Research in Rural Sociology and Development; vol. 21). Available from: https://doi.org/10.1108/S1057-192220140000021005

21. Bandanaa J, Asante IK, Egyir IS, Schader C, Annang TY, Blockeel J, et al. Sustainability performance of organic and conventional cocoa farming systems in Atwima Mponua District of Ghana. Environmental and Sustainability Indicators [Internet]. 2021;11:100121. Available from: https://www.sciencedirect.com/science/article/pii/S2665972721000222

22. Schader C, Heidenreich A, Kadzere I, Egyir I, Muriuki A, Bandanaa J, et al. How is organic farming performing agronomically and economically in sub-Saharan Africa? Global Environmental Change [Internet]. 2021;70:102325. Available from: https://www.sciencedirect.com/science/article/pii/S0959378021001047

23. Wachter JM, Painter KM, Carpenter-Boggs LA, Huggins DR, Reganold JP. Productivity, economic performance, and soil quality of conventional, mixed, and organic dryland farming systems in eastern Washington State. Agriculture, Ecosystems & Environment [Internet]. 2019;286:106665. Available from: https://www.sciencedirect.com/science/article/pii/S0167880919302816

24. Verburg RW, Verberne E, Negro SO. Accelerating the transition towards sustainable agriculture: The case of organic dairy farming in the Netherlands. Agricultural Systems [Internet]. 2022;198:103368. Available from: https://www.sciencedirect.com/science/article/pii/S0308521X2200004X

25. Han G, Arbuckle JG, Grudens-Schuck N. Motivations, goals, and benefits associated with organic grain farming by producers in Iowa, U.S. Agricultural Systems [Internet]. 2021;191:103175. Available from: https://www.sciencedirect.com/science/article/pii/S0308521X21001281

26. Hoque MN, Saha SM, Imran S, Hannan A, Seen MMH, Thamid SS, et al. Farmers' agrochemicals usage and willingness to adopt organic inputs: Watermelon farming in Bangladesh. Environmental Challenges [Internet]. 2022;7:100451. Available from: https://www.sciencedirect.com/science/article/pii/S2667010022000117

27. Aliansi Organis Indonesia. SPOI: Statistik Pertanian Organik Indonesia 2019. Firman AR, David W, editors. Bogor: Aliansi Organis Indonesia; 2020. 1–53 p.

28. Ambrosius FHW, Kramer MR, Spiegel A, Bokkers EAM, Bock BB, Hofstede GJ. Diffusion of organic farming among Dutch pig farmers: An agent-based model. Agricultural Systems [Internet]. 2022;197:103336. Available from: https://www.sciencedirect.com/science/article/pii/S0308521X21002894

29. Connor DJ. Relative yield of food and efficiency of land-use in organic agriculture - A regional study. Agricultural Systems [Internet]. 2022;199:103404. Available from: https://www.sciencedirect.com/science/article/pii/S0308521X22000403

30. Mpanga IK, Tronstad R, Guo J, LeBauer DS, Idowu OJ. On-farm land management strategies and production challenges in United States organic agricultural systems. Current Research in Environmental Sustainability [Internet]. 2021;3:100097. Available from: https://www.sciencedirect.com/science/article/pii/S2666049021000736

31. Yekti GIA, Suryaningsih Y. The implementation of rice's Good Agricultural Practices (GAP) in Panarukan-Situbondo. IOP Conference Series: Earth and Environmental Science [Internet]. 2021;746(1):12010. Available from: http://dx.doi.org/10.1088/1755-1315/746/1/012010

32. Suswadi, Rahayu ES, Harisudin M, Anantanyu S. Implementation of organic farming system and consumer satisfaction. IOP Conference Series: Materials Science and Engineering [Internet]. 2019;633(1):12053. Available from: http://dx.doi.org/10.1088/1757-899X/633/1/012053

33. Suswadi, Prasetyo A, Dwi Kartikasari R, Prasetyowati K. Internal Control System Adoption Rate for Organic Rice Certification. E3S Web Conf [Internet]. 2021;316. Available from: https://doi.org/10.1051/e3sconf/202131602008

34. Amengual D, Sentana E, Tian Z. Gaussian Rank Correlation and Regression. In: Chudik A, Hsiao C, Timmermann A, editors. Essays in Honor of M Hashem Pesaran: Panel Modeling, Micro Applications, and Econometric Methodology [Internet]. Emerald Publishing Limited; 2022. p. 269–306. (Advances in Econometrics; vol. 43B). Available from: https://doi.org/10.1108/S0731-90532021000043B012

35. Kärki P, Shamsuzzoha AHM, Helo PT. Quantifying time-based manufacturing strategy. Business Process Management Journal [Internet]. 2012 Jan 1;18(5):792–814. Available from: https://doi.org/10.1108/14637151211270162

36. Yang H, Chen S, Yang Y. Multi-scale relation analysis of power law distribution and correlation in the Chinese stock market. Lin Y, Xiong H, Chen M, editors. Kybernetes [Internet]. 2012 Jan 1;41(9):1323–33. Available from: https://doi.org/10.1108/03684921211275360

37. Ozili PK. Economic policy uncertainty, bank nonperforming loans and loan loss provisions: are they correlated? Asian Journal of Economics and Banking [Internet]. 2022 Jan 1;ahead-of-print(ahead-of-print). Available from: https://doi.org/10.1108/AJEB-10-2021-0119

38. Badan Standarisasi Nasional. SNI number 6729-2016 about Organic Farming System. Jakarta: Badan Standarisasi nasional; 2016.

39. Berkhout G, van der Duin P, Hartmann D, Ortt R. Chapter 9 Revolutionizing Chemical Production Processes Using CIM. In: Berkhout G, Van Der Duin P, Hartmann D, Ortt R, editors. The Cyclic Nature of Innovation: Connecting Hard Sciences with Soft Values [Internet]. Emerald Group Publishing Limited; 2007. p. 153–71. (Advances in the Study of Entrepreneurship, Innovation and Economic Growth; vol. 17). Available from: https://doi.org/10.1016/S1048-4736(07)17009-0

40. Chanda GK, Bhunia G, Chakraborty SK. Evaluation of nutrient status of different organic wastes along with environmental quality in the different phases of vermicomposting by Perrier. Management of Environmental Quality: An International Journal [Internet]. 2010 Jan 1;21(3):368–78. Available from: https://doi.org/10.1108/14777831011036911

41. Kornginnaya S. Financial and Decision-Making Participation of Marginalized Small Farmers Through the Pragathi Bandhu Model in India. In: Sharing Ownership, Profits, and Decision-Making in the 21st Century [Internet]. Emerald Group Publishing Limited; 2013. p. 217–58. (Advances in the Economic Analysis of Participatory & Labor-Managed Firms; vol. 14). Available from: https://doi.org/10.1108/S0885-3339(2013)0000014010

42. Adnan N, Nordin SM, Rahman I, Noor A. The impacts and visions of the green fertilizer technologies (GFT). World Journal of Science, Technology and Sustainable Development [Internet]. 2017 Jan 1;14(4):336–54. Available from: https://doi.org/10.1108/WJSTSD-08-2016-0053

43. Walisinghe BR, Ratnasiri S, Rohde N, Guest R. Does agricultural extension promote technology adoption in Sri Lanka. International Journal of Social Economics [Internet]. 2017 Jan 1;44(12):2173–86. Available from: https://doi.org/10.1108/IJSE-10-2016-0275

44. Santos RS, Wiesmeier M, Oliveira DMS, Locatelli JL, Barreto MSC, Demattê JAM, et al. Conversion of Brazilian savannah to agricultural land affects quantity and quality of labile soil organic matter. Geoderma [Internet]. 2022;406:115509. Available from: https://www.sciencedirect.com/science/article/pii/S0016706121005899

45. Yuan Z, Jin X, Guan Q, Meshack AO. Converting cropland to plantation decreases soil organic carbon stock and liable fractions in the fertile alluvial plain of eastern China.

Geoderma Regional [Internet]. 2021;24:e00356. Available from: https://www.sciencedirect.com/science/article/pii/S2352009421000018

46. Yang B, Ljung K, Nielsen AB, Fahlgren E, Hammarlund D. Impacts of long-term land use on terrestrial organic matter input to lakes based on lignin phenols in sediment records from a Swedish forest lake. Science of The Total Environment [Internet]. 2021;774:145517. Available from: https://www.sciencedirect.com/science/article/pii/S0048969721005854
47. Wang F, Zhang X, Neal AL, Crawford JW, Mooney SJ, Bacq-Labreuil A. Evolution of the transport properties of soil aggregates and their relationship with soil organic carbon following land use changes. Soil and Tillage Research [Internet]. 2022;215:105226. Available from: https://www.sciencedirect.com/science/article/pii/S0167198721002993
48. Srivastav AL. Chapter 6 - Chemical fertilizers and pesticides: role in groundwater contamination. In: Prasad Treatment and Remediation MNVBT-AD, editor. Butterworth-Heinemann; 2020. p. 143–59. Available from: https://www.sciencedirect.com/science/article/pii/B9780081030172000064
49. Mohebbi A, Farajzadeh MA. Chemical synthesis–free and facile preparation of magnetized polyethylene composite and its application as an efficient magnetic sorbent for some pesticides. Journal of Chromatography A [Internet]. 2020;1625:461340. Available from: https://www.sciencedirect.com/science/article/pii/S002196732030618X
50. Liu J, Ouyang X, Shen J, Li Y, Sun W, Jiang W, et al. Nitrogen and phosphorus runoff losses were influenced by chemical fertilization but not by pesticide application in a double rice-cropping system in the subtropical hilly region of China. Science of The Total Environment [Internet]. 2020;715:136852. Available from: https://www.sciencedirect.com/science/article/pii/S0048969720303624
51. Tang L, Luo X. Can agricultural insurance encourage farmers to apply biological pesticides? Evidence from rural China. Food Policy [Internet]. 2021;105:102174. Available from: https://www.sciencedirect.com/science/article/pii/S0306919221001536
52. Rani L, Thapa K, Kanojia N, Sharma N, Singh S, Grewal AS, et al. An extensive review on the consequences of chemical pesticides on human health and environment. Journal of Cleaner Production [Internet]. 2021;283:124657. Available from: https://www.sciencedirect.com/science/article/pii/S0959652620347016
53. Kim K, Baek S, Kim M-J, Jung J-K, Jung C, Lee J-H. Efficiency of chemical and organic pesticides for Conogethes punctiferalis (Lepidoptera: Crambidae) in commercial chestnut and walnut fields. Journal of Asia-Pacific Entomology [Internet]. 2022;25(2):101897. Available from: https://www.sciencedirect.com/science/article/pii/S1226861522000309
54. Sookhtanlou M, Allahyari MS, Surujlal J. Health Risk of Potato Farmers Exposed to Overuse of Chemical Pesticides in Iran. Safety and Health at Work [Internet]. 2022;13(1):23–31. Available from: https://www.sciencedirect.com/science/article/pii/S2093791121000792
55. Zhou B, Li X. The monitoring of chemical pesticides pollution on ecological environment by GIS. Environmental Technology & Innovation [Internet]. 2021;23:101506. Available from: https://www.sciencedirect.com/science/article/pii/S2352186421001541
56. Sarker A, Nandi R, Kim J-E, Islam T. Remediation of chemical pesticides from contaminated sites through potential microorganisms and their functional enzymes: Prospects and challenges. Environmental Technology & Innovation [Internet]. 2021;23:101777. Available from: https://www.sciencedirect.com/science/article/pii/S2352186421004259
57. de Backer E, Aertsens J, Vergucht S, Steurbaut W. Assessing the ecological soundness of organic and conventional agriculture by means of life cycle assessment (LCA). van Huylenbroek G, Mondelaers K, Aertsens J, editors. British Food Journal [Internet]. 2009 Jan 1;111(10):1028–61. Available from: https://doi.org/10.1108/00070700910992916
58. Tago D, Andersson H, Treich N. Pesticides and Health: A Review of Evidence on Health Effects, Valuation of Risks, and Benefit-Cost Analysis. In: Preference Measurement in Health [Internet]. Emerald Group Publishing Limited; 2014. p. 203–95. (Advances in Health Economics and Health Services Research; vol. 24). Available from: https://doi.org/10.1108/S0731-219920140000024006

59. Chou F, Wang C-C, Lai M-C, Tung C-H, Yang Y-J, Tsai K-H. Persuasiveness of organic agricultural products. British Food Journal [Internet]. 2020 Jan 1;122(4):1289–304. Available from: https://doi.org/10.1108/BFJ-11-2019-0868

60. Wu L, Zheng H, Wang X. Effects of soil amendments on fractions and stability of soil organic matter in saline-alkaline paddy. Journal of Environmental Management [Internet]. 2021;294:112993. Available from: https://www.sciencedirect.com/science/article/pii/S0301479721010550

61. He H, Feng Y, Wang H, Wang B, Xie W, Chen S, et al. Waste-based hydrothermal carbonization aqueous phase substitutes urea for rice paddy return: Improved soil fertility and grain yield. Journal of Cleaner Production [Internet]. 2022;344:131135. Available from: https://www.sciencedirect.com/science/article/pii/S0959652622007673

62. Huang G, Ding C, Ma Y, Wang Y, Zhou Z, Zheng S, et al. Rice (Oryza sativa L.) seedlings enriched with zinc or manganese: Their impacts on cadmium accumulation and expression of related genes. Pedosphere [Internet]. 2021;31(6):849–58. Available from: https://www.sciencedirect.com/science/article/pii/S1002016020600479

63. Sharma PK, Raghubanshi AS, Shah K. Examining dye degradation and antibacterial properties of organically induced α-MoO3 nanoparticles, their uptake and phytotoxicity in rice seedlings. Environmental Nanotechnology, Monitoring & Management [Internet]. 2020;14:100315. Available from: https://www.sciencedirect.com/science/article/pii/S2215153220301653

64. Su Y, Zhu Y, Liang Y. Interactions of mixed organic contaminants in uptake by rice seedlings. Chemosphere [Internet]. 2009;74(7):890–5. Available from: https://www.sciencedirect.com/science/article/pii/S0045653508013829

65. Abu Bakar NA, Roslan AM, Hassan MA, Abdul Rahman MH, Ibrahim KN, Abdul Rahman MD, et al. Development of life cycle inventory and greenhouse gas emission from damaged paddy grain as fermentation feedstock: A case study in Malaysia. Journal of Cleaner Production [Internet]. 2022;131722. Available from: https://www.sciencedirect.com/science/article/pii/S095965262201335X

66. E. Y, Meng J, Hu H, Cheng D, Zhu C, Chen W. Effects of organic molecules from biochar-extracted liquor on the growth of rice seedlings. Ecotoxicology and Environmental Safety [Internet]. 2019;170:338–45. Available from: https://www.sciencedirect.com/science/article/pii/S0147651318312521

67. Wacal C, Ogata N, Sasagawa D, Handa T, Basalirwa D, Acidri R, et al. Seed yield, crude protein and mineral nutrient contents of sesame during a two-year continuous cropping on upland field converted from a paddy. Field Crops Research [Internet]. 2019;240:125–33. Available from: https://www.sciencedirect.com/science/article/pii/S0378429018311870

68. Bibi F, Ilyas N, Arshad M, Khalid A, Saeed M, Ansar S, et al. Formulation and efficacy testing of bio-organic fertilizer produced through solid-state fermentation of agro-waste by Burkholderia cenocepacia. Chemosphere [Internet]. 2022;291:132762. Available from: https://www.sciencedirect.com/science/article/pii/S0045653521032343

69. Zhu L, Jia X, Li M, Wang Y, Zhang J, Hou J, et al. Associative effectiveness of bio-organic fertilizer and soil conditioners derived from the fermentation of food waste applied to greenhouse saline soil in Shan Dong Province, China. Applied Soil Ecology [Internet]. 2021;167:104006. Available from: https://www.sciencedirect.com/science/article/pii/S0929139321001268

70. Jiang Y, Ju M, Li W, Ren Q, Liu L, Chen Y, et al. Rapid production of organic fertilizer by dynamic high-temperature aerobic fermentation (DHAF) of food waste. Bioresource Technology [Internet]. 2015;197:7–14. Available from: https://www.sciencedirect.com/science/article/pii/S0960852415011591

71. Herawati VE, Hutabarat J, Pinandoyo, Radjasa OK. Growth and Survival Rate of Tilapia (Oreochromis niloticus) Larvae Fed by Daphnia magna Cultured With Organic Fertilizer Resulted From Probiotic Bacteria Fermentation. HAYATI Journal of Biosciences [Internet]. 2015;22(4):169–73. Available from: https://www.sciencedirect.com/science/article/pii/S1978301915000121

72. CHENG W, ZENG L, YANG X, HUANG D, YU H, CHEN W, et al. Preparation and efficacy evaluation of Paenibacillus polymyxa KM2501-1 microbial organic fertilizer against root-knot nematodes. Journal of Integrative Agriculture [Internet]. 2022;21(2):542–51. Available from: https://www.sciencedirect.com/science/article/pii/S2095311920634980

73. Yang M, Ma X, Xie D, Wu C, Wang Q, Gao M, et al. A study towards minimizing tylosin concentration and antibiotic resistance genes in tylosin fermentation dreg fertilizer. Journal of Environmental Chemical Engineering [Internet]. 2020;8(5):104372. Available from: https://www.sciencedirect.com/science/article/pii/S2213343720307211

74. Arunrat N, Sereenonchai S, Hatano R. Impact of burning on soil organic carbon of maize-upland rice system in Mae Chaem Basin of Northern Thailand. Geoderma [Internet]. 2021;392:115002. Available from: https://www.sciencedirect.com/science/article/pii/S0016706121000768

75. Toan N-S, Hanh DH, Dong Phuong NT, Thuy PT, Dong PD, Gia NT, et al. Effects of burning rice straw residue on-field on soil organic carbon pools: Environment-friendly approach from a conventional rice paddy in central Viet Nam. Chemosphere [Internet]. 2022;294:133596. Available from: https://www.sciencedirect.com/science/article/pii/S0045653522000856

76. Melo VF, Barros LS, Silva MCS, Veloso TGR, Senwo ZN, Matos KS, et al. Soil bacterial diversities and response to deforestation, land use and burning in North Amazon, Brazil. Applied Soil Ecology [Internet]. 2021;158:103775. Available from: https://www.sciencedirect.com/science/article/pii/S0929139320307046

77. Aynekulu E, Sileshi GW, Rosenstock TS, van Noordwijk M, Tsegaye D, Koala J, et al. No changes in soil organic carbon and nitrogen following long-term prescribed burning and livestock exclusion in the Sudan-savanna woodlands of Burkina Faso. Basic and Applied Ecology [Internet]. 2021;56:165–75. Available from: https://www.sciencedirect.com/science/article/pii/S1439179121001158

78. Pannacci E, Farneselli M, Guiducci M, Tei F. Mechanical weed control in onion seed production. Crop Protection [Internet]. 2020;135:105221. Available from: https://www.sciencedirect.com/science/article/pii/S026121942030154X

79. Vengatesha Rajaperumal C, Chidambaram PK, Arputha Bibiana M, Arun G. Development of Dual purpose manual weeder. Materials Today: Proceedings [Internet]. 2021; Available from: https://www.sciencedirect.com/science/article/pii/S2214785320406339

80. Jasrotia P, Yadav J, Lal Kashyap P, Kumar Bhardwaj A, Kumar S, Singh GP. Chapter 13 - Impact of climate change on insect pests of rice–wheat cropping system: recent trends and mitigation strategies. In: Sareen S, Sharma P, Singh C, Jasrotia P, Pratap Singh G, Sarial AKBT-ICPTCSP, editors. Woodhead Publishing Series in Food Science, Technology and Nutrition [Internet]. Woodhead Publishing; 2021. p. 225–39. Available from: https://www.sciencedirect.com/science/article/pii/B9780128213162000133

81. Lou Y-G, Zhang G-R, Zhang W-Q, Hu Y, Zhang J. Biological control of rice insect pests in China. Biological Control [Internet]. 2013;67(1):8–20. Available from: https://www.sciencedirect.com/science/article/pii/S1049964413001308

82. Raen AZ, Ye G, Lu Z, Chang X, Shen X, Peng Y, et al. Impact Assessments of Transgenic cry1Ab Rice on the Population Dynamics of Five Non-Target Thrips Species and Their General Predatory Flower Bug in Bt and Non-Bt Rice Fields Using Color Sticky Card Traps. Journal of Integrative Agriculture [Internet]. 2013;12(10):1807–15. Available from: https://www.sciencedirect.com/science/article/pii/S2095311913604992

83. Hefting MM, Clement J-C, Bienkowski P, Dowrick D, Guenat C, Butturini A, et al. The role of vegetation and litter in the nitrogen dynamics of riparian buffer zones in Europe. Ecological Engineering. 2005;24(5):465–82.

84. Playne MJ, McDonald P. The buffering constituents of herbage and of silage. Journal of the Science of Food and Agriculture. 1966;17(6):264–8.

85. Correll DL. Buffer zones and water quality protection: general principles. Buffer zones: Their processes and potential in water protection. 1996;7–20.

18% Overall Similarity

Top sources found in the following databases:

- 14% Internet database
- 11% Publications database
- Crossref database
- Crossref Posted Content database
- 11% Submitted Works database

TOP SOURCES

The sources with the highest number of matches within the submission. Overlapping sources will not be displayed.

1	doaj.org Internet	3%
2	sinta.lldikti6.id Internet	2%
3	journal.perbanas.ac.id Internet	2%
4	aimspress.com Internet	2%
5	G. I. A. Yekti, Y. Suryaningsih. "The implementation of rice's Good Agri... Crossref	1%
6	Suswadi, K Prasetyowati, R D Kartikasari, A Prasetyo. "A feasibility stu... Crossref	1%
7	testmagzine.biz Internet	<1%
8	Eni Istiyanti, Dian Widi Anitasari, Nadiah Binti Zainal Abidin. "The devel... Crossref	<1%

9	repository.unibos.ac.id Internet	<1%
10	Suswadi, Agung Prasetyo, Ratih Dwi Kartikasari, Kusriani Prasetyowati.... Crossref	<1%
11	Sir James Henderson School on 2024-01-12 Submitted works	<1%
12	Asian Institute of Technology on 2019-03-28 Submitted works	<1%
13	H P Saliem, S H Susilowati, E Ariningsih, A Agustian, Muksin. "Supporti... Crossref	<1%
14	University of Wales, Bangor on 2020-06-03 Submitted works	<1%
15	repository.umy.ac.id Internet	<1%
16	R Krisdiyanto, M Harisudin, H Irianto. "Technical efficiency of organic ri... Crossref	<1%
17	University of Exeter on 2012-12-10 Submitted works	<1%
18	encyclopedia.pub Internet	<1%
19	Columbia Southern University on 2007-10-15 Submitted works	<1%
20	agrosym.ues.rs.ba Internet	<1%

21	journal.trunojoyo.ac.id Internet	<1%
22	link.springer.com Internet	<1%
23	coursehero.com Internet	<1%
24	researchgate.net Internet	<1%
25	Hung Gia Hoang. "Determinants of adoption of organic rice production:... Crossref	<1%
26	Sumarsono, Yafizham, D W Widjajanto. "The level of organic rice farmi... Crossref	<1%
27	University of Venda on 2023-02-25 Submitted works	<1%
28	Universitas Hasanuddin on 2023-12-02 Submitted works	<1%

Excluded from Similarity Report

- Bibliographic material
- Manually excluded sources

EXCLUDED SOURCES

migrationletters.com Internet	97%
irep.iium.edu.my Internet	20%
Eni Istiyanti, Aldian Huda Aditya Darmawan, Khamsing Keothoumma. "The fac... Crossref	12%