Request to review manuscript (#IJROWA-2204-1456)

From: International journal of recycling organic waste in agriculture (journals@iau.ir)

To: striyono2001@yahoo.com

Date: Tuesday, May 17, 2022, 10:44 AM GMT+7

Manuscript ID: IJROWA-2204-1456

Manuscript Title: **Influence of composting conditions on compost quality produced from cow manure and wheat straw composting**

Date: 2022-05-16

Dear **Sugeng Triyono**

I cordially invite you to review the manuscript which has been submitted to the IJROWA journal.

The abstract appears at the end of this letter. Please let me know as soon as possible if you will be able to accept my invitation to review BY CLICKING ON ONE OF THE OPTIONS AT THE END OF THIS LETTER -- AGREED, DECLINED. Please click the appropriate link at the bottom of the page to automatically register your reply with our online manuscript submission and review system.

Please review this manuscript to **2022-06-03**.

I realize that our expert reviewers greatly contribute to the high standards of the Journal, and I thank you for your present and/or future participation.

Truly yours,

To respond automatically, click below:

Agreed: http://ijrowa.khuisf.ac.ir/reviewer?_ad=JDq8VLvZq7.W36allYT2rd85NQvQCM6exxDxrVnPizuKB35J9Nno90mczMkfSg2VP83pKos_nFRO6S.KsZSDAg--

Declined: http://ijrowa.khuisf.ac.ir/reviewer?_ad=4d6YHDWOtU.t5oXUPt_zNt7ZgJBCJZ7dvWuNtoEaQRzJ3xqoeg88rLQKpXYiGlJ2sRwlLfKhatNPZG5J7sVumQ--

To access the manuscript in journal website, click the link below:

http://ijrowa.khuisf.ac.ir/reviewer?_ad=JMepBOqxu3B_3fJgsAUrMK1nKTWLet5b_WbskSwuinci4aIc8QmWjNSgjKX8pYADRIswDmwrJT7OkYC9L1RmQg--

MANUSCRIPT DETAILS

TITLE: **Influence of composting conditions on compost quality produced from cow manure and wheat straw composting**

ABSTRACT:

The composting of manure is the common practice for the feedlots of cattle, but the emission of gasses during the composting was poorly understood. The main objective of this study was to quantify the emission of methane (CH_4) and carbon dioxide (CO_2) during composting process. The experiment was performed under CRD with three treatments (T1 = 3:1, T2 = 1:1 and T3 = 1:3) of cow manure and wheat straw under aerobic and anaerobic composting conditions. The results showed that the composting conditions significantly influenced the emission of greenhouse gasses and the compost quality. The maximum gas volume (658 ml) and methane production (58.89%) was produced under the anaerobic decomposition of cow manure and wheat straw 3:1, respectively. The maximum carbon dioxide (18.56 %) was produced under the aerobic decomposition of cow manure and wheat straw 1:3, respectively. The nutrient analysis of compost revealed that the high-quality compost with maximum total organic carbon (20.1 %), total nitrogen (2.47 %), phosphorus (0.76%) and potassium (1.49%) was observed from the compost produced from the anaerobic decomposition of cow manure and wheat straw @ 3:1, respectively. This work highlights that the anaerobic composting of cow manure and wheat straw has potential to reduce the organic waste, produce the biogas and best quality compost which ultimately reduce the environmental pollution.

The quartile of the International Journal of Recycling of Organic Waste in Agriculture improved from Q2 to Q1 in the scimago.

https://www.scimagojr.com/journalsearch.php?q=21100395913&tip=sid&clean=0

Reviewer Agreed to Review Manuscript (#IJROWA-2204-1456)

From: International journal of recycling organic waste in agriculture (journals@iau.ir)
To: striyono2001@yahoo.com
Cc: jrowa2011@gmail.com
Date: Friday, May 27, 2022, 08:13 AM GMT+7

Manuscript ID: IJROWA-2204-1456

Manuscript Title: **Influence of composting conditions on compost quality produced from cow manure and wheat straw composting**

Dear **Sugeng Triyono**

Thank you for agreeing to review the above-mentioned manuscript for the Ijrowa journal. Please kindly complete your review within the next 2 weeks time.

In the review page, there is a space for "Comments to Author" and a space for "Comments to the Editor." Please be sure to put your comments to the author specifically in the appropriate space.

To access the manuscript, login to the site at http://ijrowa.khuisf.ac.ir/

For direct access to the paper please follow this link:

http://ijrowa.khuisf.ac.ir/reviewer?_ad=bxQSlhuPNs4tCMt3GDrxIUCPrTrb.7UZ4YBgrPE__sQBB9586xF8MOPOope.4My1mVNylG2rASpB4PK_aGe3cQ--

Once you logged in, the Main Menu will be displayed. Please click on the Reviewer Center, where you will find the manuscript listed under "Pending Assignments." You can click on the manuscript title from this point or you can click on the "View Details" button to begin reviewing the manuscript.

All communications regarding this manuscript are privileged. Any conflict of interest, suspicion of duplicate publication, fabrication of data or plagiarism must immediately be reported to us.

Thank you for evaluating this manuscript.

Truly yours,

Editorial Office of **International journal of recycling organic waste in agriculture**

The quartile of the International Journal of Recycling of Organic Waste in Agriculture improved from Q2 to Q1 in the scimago.

https://www.scimagojr.com/journalsearch.php?q=21100395913&tip=sid&clean=0

Reviewer's comments (Sugeng Triyono)

Absract: format just follow the rule

Introduction:

Line 31-37. This article is nothing about antibiotics. So replacing with related issues is better

Materials And Methods

Line 59-61. This experiment comprised on six treatments viz. T_1: CM + WS (25 % + 75 %), T_2: CM+WS (50 %+50%) and T_3: CM +WS (75% +25%) under aerobic and anaerobic conditions.

The first factor (treatment) comprised of three levels e.g.: T_1: CM + WS (25 % + 75 %), T_2: CM+WS (50 %+50%) and T_3: CM +WS (75% +25%). While the second factor consisted of two levels e.g. aerobic and anaerobic conditions. Adjust your abstract too.

Line 64. Water is added. How much?

Line 87-88. When the color will be changed from black to green or white then the flask was cooled at room temperature.

Didn't you use heating for this digestion? Clarify.

Line 91. N(%)= ….

Every code/label/abbreviation should be added description properly.

Line 98. P(%) = … needs description too

Results and Discussion

Line 107-114. These were supposed to be described in the method section. If analysis of Variance used, Authors have to mention the data analyses in the methodology section too. And what multiple comparison method did you use? Describe completely in the method section.

Looking at the immerging factor of "days (T)", you actually had three factors instead of two. The day factor (D) had to be mentioned in the methodology too. Clarify and corrected. Also highlight id if this factor was just for observing gas dynamic during the composting.

Conclusion Part

Limit your conclusion just on what your finding. Which method of composting produced best quality of compost, mostly conserved nutrient, and emitted least GHG.

Overall: I do not see any Figures.

Vochozka M, Maroušková A, Šuleř P (2017) Obsolete laws: economic and moral aspects, case study—composting standards. Sci Eng Ethics 23:1667–1672. https://doi.org/10.1007/s11948-016-9831-9.

Influence of composting conditions on compost quality produced from cow manure and wheat straw composting

Formatted: Numbering: Continuous

ABSTRACT

The composting of manure is the common practice for the feedlots of cattle, but the emission of gasses during the composting was poorly understood. The main objective of this study was to quantify the emission of methane (CH_4) and carbon dioxide (CO_2) during composting process. The experiment was performed under CRD with three treatments (T1 = 3:1, T2 = 1:1 and T3 = 1:3) of cow manure and wheat straw under aerobic and anaerobic composting conditions. The results showed that the composting conditions significantly influenced the emission of greenhouse gasses and the compost quality. The maximum gas volume (658 ml) and methane production (58.89%) was produced under the anaerobic decomposition of cow manure and wheat straw 3:1, respectively. The maximum carbon dioxide (18.56 %) was produced under the aerobic decomposition of cow manure and wheat straw 1:3, respectively. The nutrient analysis of compost revealed that the high-quality compost with maximum total organic carbon (20.1 %), total nitrogen (2.47 %), phosphorus (0.76%) and potassium (1.49%) was observed from the compost produced from the anaerobic decomposition of cow manure and wheat straw @ 3:1, respectively. This work highlights that the anaerobic composting of cow manure and wheat straw has potential to reduce the organic waste, produce the biogas and best quality compost which ultimately reduce the environmental pollution.

Key words: Composting, Greenhouse gasses, Organic waste, Anerobic composting, Compost quality

INTRODUCTION

Composting is the widely used practice in the farms for management of management and development of various fertilizers rich in nutrients. The composting process uses many methods, windrows, in-vessel and static pile composting. The pile composting can be done in different intensity levels, by turning, forced aeration and addition of water within open or closed containers. Furthermore, some farms amend the compost with other organic matter sources while others only used solid manure for composting (Peigné and Girardin, 2004). The main objective of the researchers in composting is to enhance the nutrient availability in the soil by the application of compost and reduce compost volume, odor reduction and weight reduction of compost.

Additionally, for solid manure recycling, the composting process is the most effective for the mitigation of antibiotics. Many studies highlighted that the compositing process can reduced the tetracycline in manure up to 70 to 90% (Wu *et al.,* 2011; Massé *et al.,* 2014). The sulfonamides concentrations, like sulfamethazine, sulfamethoxazole and sulfadiazine are also minimized or eliminated through composting (Selvam *et al.,* 2012; Liu *et al.,* 2015). It was observed that the

Formatted: Font color: Red

degradation of antibiotics during compositing process are associated with the nature of composting substrate, ratio of carbon to nitrogen (C:N), moisture content, temperature, pH and aeration.

An efficient composting process primarily depends on the maximum control of feed stock mixture, ratio of carbon to nitrogen (C:N), moisture content, temperature, pH and aeration (Gao *et al.,* 2010). The ideal condition for the compositing is ratio of carbon to nitrogen (C:N) is 20 and 40, moisture content (40 to 60%), temperature (55 to 60 °C) and pH (5.0 to 8.0) (Neklyudov *et al.* 2008). But international technical standards need the ratio of carbon to nitrogen about 20-30 for the production of high quality compost (Vochozka *et al.* 2017). The high C:N slow the process of composting as the microorganism has to degrade the excess amount of carbon, but low ratio of C:N indicate an excess of nitrogen which may be lost from the process (Antil *et al.* 2014). Therefore, low ratio of C/N needs addition of more composting material for balancing of both elements. The carbon amendments and manure proportion in the compost effects the microflora of compost which may disturbs the zoonotic pathogen survival (Erickson *et al.* 2009). The balancing of C/N ratio is also essential in composting for optimization of bulking material which availability is limited in some areas. So, there is immense need to enhance the nutrient contents in the composting material, reduce the odor and other impurities by various amendment in the composing material. This study was planned to find the best condition of composting for quality compost production.

MATERIALS AND METHODS

For decomposition of biomass, wheat straw (WS) and cow manure (CM) were collected and subjected to decomposition process through oxidative CC1 (aerobic) and fast decomposition and fermentative and CC2 (anaerobic), slow decomposition way.

The experiment was laid under completely randomized design (CRD) in factorial arrangement with three replications under two factors i.e., treatments and compositing conditions. This experiment comprised on six treatments viz. T_1: CM + WS (25 % + 75 %), T_2: CM+WS (50 %+50%) and T_3: CM +WS (75% +25%) under aerobic and anaerobic conditions. The composting materials are mixed thoroughly to homogenize the material (Figure 1).

The decomposition was carried out in the controlled container of (20L) which was filled one third with the mixed ratio of composting material and then water is added to fill the container. The compositing was carried out for 48 days (Figure 2).

The data was recorded for the emission of greenhouse gasses (CH_4 and O_2) on daily basis up to 48 days with the help of BH-4S Portable Multi-Gas Detector Bosean Electronic Technology Co., Ltd., Zhengzhou, China (Figure 3). The gas volume was also recorded from the gas storage bags. The daily outside and inside drum temperature was also recorded with the help of portable thermometer. When the compositing process is completed then the compost was air dried in the shade and then used for the analysis of organic matter, nitrogen (N), phosphorus (P) and potassium(K) in the sample. The detailed procedure is given below.

Organic matter (%)

Organic matter is estimated by the loss on ignition (LOI), or "volatile solids," method, which estimates the portion of sample weight lost during combustion at 550°C (1,022°F). Because organic matter content is not determined directly by the LOI method, the reported value is only an approximation. Weight can also be lost during combustion from other sources, including rubber, plastic, and "mineral-bound" water. Often, low organic matter values in compost (below 25 percent) result from soil or sand being mixed into the compost during turning. This is common when compost is prepared on bare ground. Composts with high levels of organic matter (more than 65 percent) may not have been thoroughly composted. These materials may contain considerable unstable organic matter that will be lost (as carbon dioxide gas) via rapid decomposition after field application.

Nitrogen (%)

After grinding of compost one gram sample was added into 50 ml digestion flask by adding 12 ml H_2SO_4 for each sample. When the color will be changed from black to green or white then the flask was cooled at room temperature and volume was made up to 100 ml and put the sample in distillation unit for distillation. The nitrogen in the form of ammonia was collected in 4% boric acid solution and then titrate with 0.1 normal H_2SO_4 as described by Jones *et al.* (1991).

Formatted: Font color: Red

$$N (\%) = \frac{(V-B_1) \times N \times V_2 \times 14.01 \times 100}{Wt_2 \times V_3 \times 1000}$$

Formatted: Font color: Red

Phosphorus (ppm)

Dicarboxylic acid mixture was used for digestion of compost sample. After digestion color developing reagents were prepared by using ammonium molybdate and nitric acid. Then sample were run in spectrophotometer after calibration with ‘P’ standards as method described by Jones Jr *et al.*, (1991).

$$P\ (\%) = \text{ppm P (From calibration curve)} \times \frac{V_1}{Wt} \times \frac{100}{V_2} \times \frac{1}{1000}$$

Formatted: Font color: Red

Potassium

Flame photometer was calibrated with standard solution. One-gram dried sample was dissolved in (distilled) water and then filtered through filter paper. Emission reading was taken at 767 nm wavelength. The potassium was determined by using flame photometer as described by Jones Jr *et al.,* (1991). Potassium concentration was calculated according to callibration curve.

Soluble K (ppm) = ppm K (from calibration curve)

Results and Discussion

During composting the greenhouse gasses produced were measured with the portable gas detector (BH 4S, Bonsean Technologies China) from each treatment separately. The obtained data was statistically analyzed find the differences among the treatments. The results showed significant differences among days (D), conditions (C), treatments (T), days × condition (D × C), days × treatments (D × T), condition × treatments (C × T) and days × condition × treatments (D × C × T) for Oxygen (O_2), Methane (CH_4), Hydrogen Sulfide (H_2S), Carbon Dioxide (CO_2), Volume and Inside temperature, while the Oxygen (O_2) differed non-significantly among the treatments (Table 1).

Formatted: Font color: Red

Formatted: Font color: Red

The gas volume varied significantly among the conditions, composting treatments and composting duration. In case of **Conditions x Treatments (C × T)** the more gas volume was produced under anaerobic conditions than the aerobic conditions. Among the treatments the maximum gas volume (658 ml) was recorded under cow manure : wheat straw (3:1) under anaerobic conditions, followed by cow manure : wheat straw (3:1) under anaerobic conditions (378 ml). The lowest gas volume (285 ml) was recorded under cow manure : wheat straw (1:3) (Figure 4). It was observed that the composting condition has the significant effect on the gas volume and more gas was produced under anaerobic composting.

In case of **Days x Conditions (D × C)** the more gas production was observed under anaerobic conditions compared to aerobic composting. The maximum gas volume (469 ml) was recorded under anaerobic composting after 15 days of composting, followed by anerobic composting under 20 and 25 days of composting (362 and 367 ml). The lowest gas volume was observed (30 and 0 ml) was recorded under aerobic conditions at 45th and 50th day of composting (Figure 5).

Formatted: Font color: Red

In case of **Days** × **Treatments (D** × **T)** the cow manure : wheat straw (3:1) produced more gas volume compared to other treatments. The maximum gas volume (539 ml) was observed under cow manure : wheat straw (3:1) at 15th day of composting, followed by 451 ml, recorded under cow manure : wheat straw (3:1) at 10th day of composting. The minimum gas volume (24 ml) was recorded under cow manure : wheat straw (1:3) at 50th day of composting (Figure 6).

Formatted: Font color: Red

The methane production is the most important during the composting process as in the commercial composting the methane used as a biogas to fulfil the energy demand. It was observed that the methane production was more in the anaerobic composting than the aerobic composting. The results showed that among the **Conditions x Treatments (C** × **T)** the composting under anerobic conditions produced more methane than the aerobic composting. The maximum methane (58.89 %) was produced under anaerobic condition from the treatment manure : wheat straw (3:1), followed by 47.41% produced under anerobic condition from the treatment manure : wheat straw (1:1). The lowest methane (18.83 %) was produced under aerobic composting of the treatment manure : wheat straw (1:3) (Figure 7).

The interactive effect of **Conditions x Days (C** × **D)** also influenced the methane production. It was observed that the maximum methane (57.29 %) was recorded under anaerobic condition at 30th day of composting, followed by 40.77 % recorded under anaerobic condition at 25th day of composting. The lowest 10.96% and 0 % was recorded under anaerobic and aerobic conditions at 50th day of composting (Figure 8).

In case of **Days** × **Treatments (D** × **T)** the maximum methane was produced under cow manure : wheat straw (3:1) compared to other treatments. The maximum methane (63%) was observed under cow manure : wheat straw (3:1) at 30th day of composting, followed by 49.57 %, recorded under cow manure : wheat straw (3:1) at 25th day of composting. The minimum methane (15.36 %) was recorded under cow manure : wheat straw (3:1) and (1:1) at 50th day of composting (Figure 9). According to Beck-Friis et al. (2003), the emission of methane, occurs only during the thermophile phase, representing less than 2% of the initial TOC in the case of a poorly ventilated compost pile. Volatile fatty acids, found in young composts can also be released during composting. These results demonstrated that the anaerobic decomposition produces the more gases compared to aerobic decomposition of the organic waste.

Our results showed that aerobic composting produced more carbon dioxide compared to anaerobic composting, as in the aerobic composting more oxygen is present so, more production of carbon dioxide. The results revealed that among **Conditions x Treatments (C × T)** aerobic composting produced more carbon dioxide compared to anaerobic conditions. The maximum carbon dioxide (18.56 %) was produced under aerobic condition from the treatment manure : wheat straw (1:3), followed by 15.64 % recorded under aerobic conditions from the treatment manure : wheat straw (1:1). The lowest carbon dioxide (11.34 and 12.05 %) was recorded under anaerobic conditions from the treatment manure : wheat straw (1:1 and 3:1), respectively (Figure 10).

In case of **Conditions x Days (C × D)** the maximum carbon dioxide (46.9 %) was produced under aerobic condition at 5th day of composting, followed by 43.4 % recorded under aerobic condition at 15th day of composting. The lowest carbon dioxide 0 and 0.2 % was recorded under aerobic and anaerobic conditions at 50th day of composting (Figure 11).

In case of **Days × Treatments (D × T)** the maximum carbon dioxide was produced under cow manure : wheat straw (3:1) compared to other treatments. The maximum carbon dioxide (49.8 %) was observed under cow manure : wheat straw (3:1) at 15th day of composting, followed by 49.35 %, recorded under cow manure : wheat straw (1:3) at 5th day of composting. The minimum carbon dioxide (0, 0 and 0.3 %) was recorded under cow manure : wheat straw (1:3, 1:1 and 3:1) at 50th day of composting, respectively (Figure 12). To maintain the aerobic condition inside the compost pile, a minimum rate of 5% O_2 in pore space is required, while anaerobic condition occurs with less than 1% of O_2 (Mustin 1987). During the active phases of aerobic fermentation, the microorganisms consume 15 to 30 times more carbon than nitrogen (Mustin 1987). Thus, resulting in more oxygen production in the aerobic composting compared to anaerobic composting. The production of methane is the main event during the anaerobic composting. The possible presence of anaerobic sites in the compost pile may result in methane (CH_4) emissions associated with fermentative metabolism (He *et al.,* 2000).

Nutrient analysis of compost

The compost produced from both aerobic and anaerobic composting were analyzed for the nutrient composition. The results showed significant differences for the total organic carbon among the treatments (T), conditions (C) and interaction treatment × conditions (T × C), while the nitrogen differed significantly among the treatments and non-significantly among conditions and interaction (T × C). The phosphorus showed non-significant differences among the treatments, conditions and interaction (T × C). The potassium differed significantly among treatments and conditions, but non-significantly differed among the interaction (T × C) (Table 2). The compost quality is determined by the micronutrients produced during the composting process. Our results showed that the maximum nitrogen, total organic carbon, phosphorus and potassium was produced by the decomposition of cow manure and wheat straw under anaerobic condition, while the anaerobic composting produced lower than anaerobic composting. During the active phases of aerobic fermentation, the microorganisms consume 15 to 30 times more carbon than nitrogen (Mustin 1987).

Formatted: Font color: Red

In case of total organic carbon the maximum value (20.1 %) was observed under anaerobic composting of cow manure : wheat straw (3:1), followed by 15.1 %, recorded under anaerobic composting of manure : wheat straw (1:1). The lowest value of total organic carbon (11.98 %) was observed under aerobic composting of manure : wheat straw (1:3) (Figure 13). So, it is concluded that the composting of cow manure under anaerobic conditions produces more total organic carbon compared with anaerobic composting. Thus, suggesting that the organic carbon is less in the aerobic composting than anaerobic composting. During composting, organic nitrogen of waste is mineralized mainly into ammonium (NH^{4+}) and nitrate (NO^{3-}) when nitrification is achieved. Part of this mineral nitrogen is reincorporated into the active microbial metabolism during composting, some is incorporated into organic matter compost in their humification, and part is released in the form of inorganic nitrogen matrix (Larsen and McCartney 2000).

The maximum value (2.47 %) of total nitrogen was observed under anaerobic composting of cow manure : wheat straw (3:1), followed by 1.93 %, recorded under anaerobic composting of manure : wheat straw (1:1). The lowest nitrogen (1.56 %) was observed under aerobic composting of manure : wheat straw (1:3) (Figure 14). At the end of composting, mineralization process become predominant, and an increase in the content of NO^{3-} is frequently observed (Sanchez-Monedero et al. 2001). Under optimal aeration condition, the pH rise causes a transformation of NH^{4+} into a volatile nitrogen (NH_3). On the other hand, the limited ventilation causes an increase in the content of volatile fatty acids, resulting in a decrease of the pH, and locking of nitrogen as NH^{4+} (Michel and Reddy 1998). These results showed that the anaerobic composting reduces the nitrogen losses thus more nitrogen is produced in the anaerobic composting. Finally, these results showed that the anaerobic composting produced more gas volume and best quality compost compared to aerobic composting.

The composting conditions also significantly influenced the phosphorus and potassium. The maximum phosphorus (0.76 %) and potassium (1.49 %) was observed under anaerobic composting of cow manure : wheat straw (3:1), followed by 0.71 % and 1.42 % of phosphorus and potassium was recorded under anaerobic composting of manure : wheat straw (1:1). The lowest value of phosphorus (0.63 %) and potassium (1.26 %) was observed under aerobic composting of manure : wheat straw (1:3) (Figure 15 and 16, respectively).

Conclusion

There are many parameters that can be considered for start-up, monitoring and quality of compost. However, it becomes challenging when extrapolating the process into field and industrial level. Nowadays, gas and moisture sensors become to be used in monitoring by large composting companies, but farmers and small composters cannot afford the device and the analytical cost. The composting of cow manure will help to minimize the solid waste and also results in the production of gas for the household use. It also produces the best quality compost and minimize the farmers input expenses for the purchase of expensive inorganic fertilizer. The composting has the potential to reduce the environmental pollution by reducing the extensive inorganic fertilizer use and it also enhance the soil organic profile.

REFRENCES

Antil RS, Raj D, Abdalla N, Inubushi K (2014) Physical, chemical and biological parameters for compost maturity assessment: a review. In: Maheshwari D (ed) Composting for sustainable agriculture. Sustainable Development and Biodiversity, vol 3. Springer, Cham, pp 83–101. DOI: 10.1007/978-3-319-08004-8_5.

Beck-Friis B, Smars S, Jönsson H, Eklind Y, Kirchmann H (2003) Composting of source-separated household organics at different oxygen levels: gaining an understanding of the emission dynamics. Compost Sci Util 11(1):41–50. https://doi.org/10.1080/1065657X.2003.10702108.

Erickson MC, Liao J, Ma L, Jiang X, Doyle MP (2009) Inactivation of *Salmonella* spp. in cow manure composts formulated to different initial C: N ratios. Bioresour Technol 100:5898–5903. https://doi.org/10.1016/j.biortech.2009.06.083.

Gao M, Liang F, Yu A, Li B, Yang L (2010) Evaluation of stability and maturity during forced-aeration composting of chicken manure and sawdust at different C/N ratios. Chemosphere 78:614–619. https://doi.org/10.1016/j.chemosphere.2009.10.056.

He Y, Inamori Y, Mizuochi M, Kong H, Iwami N, Sun T (2000) Measurements of N2O and CH4 from aerated composting of food waste. Sci Total Environ 254:65–74. https://doi.org/10.1016/S0048-9697(00)00439-3.

Larsen K, McCartney D (2000) Effect of C/N ratio on microbial activity and N retention: bench-scale study using pulp and paper Biosolids. Compost Sci Util 8(2):147–159. https://doi.org/10.1080/1065657X.2000.10701760.

Liu, B, Li, Y, Zhang, X, Feng, C, Gao, M, Shen, Q (2015) Effects of composting process on the dissipation of extractable sulfonamides in swine manure. Bioresour Technol 175:284-290. https://doi.org/10.1016/j.biortech.2014.10.098.

Massé, DI, Saady, NMC, Gilbert, Y (2014) Potential of Biological Processes to Eliminate Antibiotics in Livestock Manure: An Overview Animals 4:146-163. https://doi.org/10.3390/ani4020146.

Michel F, Reddy C (1998) Effect of oxygenation level on yard trimmings composting rate, odor production, and compost quality in bench-scale reactors. Compost Sci Util 6(4):6–14. https://doi.org/10.1080/1065657X.1998.10701936.

Mustin M (1987) Le compost : La gestion de la matière organique. Francois Dubusc, Paris. p. 954.

Neklyudov AD, Fedotov GN, Ivankin AN (2008) Intensification of composting processes by aerobic microorganisms: a review. Appl Biochem Microbiol 44:6–18. DOI:10.1134/S000368380801002X.

Peigné, J, Girardin, P (2004) Environmental Impacts of Farm-Scale Composting Practices. Water Air Soil Pollut 153:45-68. https://doi.org/10.1023/B:WATE.0000019932.04020.b6.

Sanchez-Monedero M, Roig A, Paredes C, Bernal M (2001) Nitrogen transformation during organic waste composting by the Rutgers system and its effects on pH, EC and maturity of the composting mixtures. Bioresour Technol 78(3):301–308. https://doi.org/10.1016/S0960-8524(01)00031-1.

Selvam, A, Zhao, Z., Wong, JW (2012) Composting of swine manure spiked with sulfadiazine, chlortetracycline and ciprofloxacin. Bioresour Technol 126:412–417. https://doi.org/10.1016/j.biortech.2011.12.073.

Vochozka M, Maroušková A, Šuleř P (2017) Obsolete laws: economic and moral aspects, case study—composting standards. Sci Eng Ethics 23:1667–1672. https://doi.org/10.1007/s11948-016-9831-9.

Wu, X, Wei, Y, Zheng, J, Zhao, X, Zhong, W (2011) The behavior of tetracyclines and their degradation products during swine manure composting. Bioresour Technol 102: 5924-5931. https://doi.org/10.1016/j.biortech.2011.03.007.

Reviewer's comments

Formatted: Font color: Light Blue

Absract: format just follow the rule

Introduction:

Line 31-37. This article is nothing about antibiotics. So replacing with related issues is better

Materials And Methods

Line 59-61. This experiment comprised on six treatments viz. T_1: CM + WS (25 % + 75 %), T_2: CM+WS (50 %+50%) and T_3: CM +WS (75% +25%) under aerobic and anaerobic conditions.

The first factor (treatment) comprised of three levels e.g.: T_1: CM + WS (25 % + 75 %), T_2: CM+WS (50 %+50%) and T_3: CM +WS (75% +25%). While the second factor consisted of two levels e.g. aerobic and anaerobic conditions. Adjust your abstract too.

Line 64. Water is added. How much?

Line 87-88. When the color will be changed from black to green or white then the flask was cooled at room temperature.

Didn't you use heating for this digestion? Clarify.

Line 91. N(%)= ….

Every code/label/abbreviation should be added description properly.

Line 98. P(%) = … needs description too

Results and Discussion

Line 107-114. These were supposed to be described in the method section. If analysis of Variance used, Authors have to mention the data analyses in the methodology section too. And what multiple comparison method did you use? Describe completely in the method section.

Looking at the immerging factor of "days (T)", you actually had three factors instead of two. The day factor (D) had to be mentioned in the methodology too. Clarify and corrected. Also highlight id if this factor was just for observing gas dynamic during the composting.

Conclusion Part

Limit your conclusion just on what your finding. Which method of composting produced best quality of compost, mostly conserved nutrient, and emitted least GHG.

Overall: I do not see any Figures.