joko priyono <joko_priyono@unram.ac.id>

# SciencePG: Review Results for Manuscript Numbered [3431184]

1 pesan

**Prereview SPGManuscript** <revision02@sciencepg.com> 23 April 2020 15.23
Kepada: joko_priyono@unram.ac.id, jokotanahunram@gmail.com

Dear Joko Priyono,

Greetings from SciencePG.

Attached you can find the edited manuscript [IJAAS_3431184_20200412] and review results from the reviewers.

**Please note the following items:**

1. **We have carefully typeset the manuscript for you. Please revise your manuscript directly on the attached typeset manuscript**. And mark yellow where you have revised. DO NOT revise on your original manuscript.

2. Please send back your revised manuscript by e-mail to revision02@sciencepg.com within one week. If you need to extend the time, please inform us how long you need to finish the revision.

3. We will send your revised manuscript to the Editor-in-Chief for checking.

**The sooner your revised manuscript reaches us, the earlier it will be published.**

Looking forward to your revised manuscript.

Best regards,

Judy Garland
Editorial assistant
Science Publishing Group, USA

**3 lampiran**

**Manuscript_Template.docx**
122K

**IJAAS_3431184_20200412.docx**
161K

**SciencePG_IJAAS_Review_Result.docx**
129K

**International Journal of Applied Agricultural Sciences**
2020; X(X): XX-XX
http://www.sciencepublishinggroup.com/j/ijaas
doi: 10.11648/j.XXXX.2020XXXX.XX
ISSN: 2469-7877 (Print); ISSN: 2469-7885 (Online)

# Silicate Rock-Based Fertilizers Improved the Production of Sugarcane Grown on Udipsamments Kediri, East Java, Indonesia

**Joko Priyono[1, *], Djajadi[2], Sulis Nur Hidayati[2], Sandi Gunawan[3], Ikhlas Suhada[4]**

[1]Department of Soil Science, University of Mataram, Jalan Pendidikan 37 Mataram, NTB, Indonesia

[2]Indonesian Sweetener and Tuber Crops Research Institute, Jalan Karangploso PO Box 199, Malang, East Java, Indonesia

[3]Sugarcane Research Center of PT Perkebunan Nusantara (PTPN) X, Kediri, East Java, Indonesia

[4]PT. JIA Agro Indonesia, Jalan Sulawesi 11, Gunungsari, West Lombok, NTB, Indonesia

## Email address:

joko_priyono@unram.ac.id (Joko Priyono), jaydjajadi61@gmail.com (Djajadi), sulisnh@yahoo.con (Sulis Nur Hidayati), sgunawan19@gmail.com (Sandi Gunawan), suhadaku32@gmail.com (Ikhlas Suhada)

[*]Corresponding author

## To cite this article:

Joko Priyono, Djajadi, Sulis Nur Hidayati, Sandi Gunawan, Ikhlas Suhada. Silicate Rock-Based Fertilizers Improved the Production of Sugarcane Grown on Udipsamments Kediri, East Java, Indonesia. *International Journal of Applied Agricultural Sciences*. Vol. x, No. x, 2020, pp. x-x. doi: 10.11648/j.xxx.xxxxxxxx.xx

**Received**: MM DD, 2020; **Accepted**: MM DD, 2020; **Published**: MM DD, 2020

**Abstract:** Improving the farming productivity and profitability of sugarcane in Indonesia requires appropriate fertilization method. So, three types of silicate rock-based fertilizers were developed and tested in field condition. The main objectives of this research were to identify the effects of liquid-silicate rock fertilizer (LSRF) in addition to NPK, and granules of $NP_{70}$-Si and $NP_{100}$-Si on the growth and yield components of sugarcane grown on Udipsamments. A randomized complete block design was employed with the treatment consisting of F-0 (NPK) as the reference of fertilizer package, F-1 (NPK + LSRF applied onto the leaf), F-2 (NPK + LSRF applied to the soil), F-3 ($NP_{70}$-Si), and F-4 ($NP_{100}$-Si), and those were replicated in five blocks. Results reveal that the applications of those different fertilizer packages significantly affected the germination of seed buds, cane production, and sugar yield, but did not for the other growth and yield components. The order of its agronomic and economic effectiveness of the fertilizer packages, based on the value of either cane production or sugar yield, was F-2 > F-1 > F-4 > F-0 > F-3. Therefore, the use of the fertilizer package of F-2 (NPK + LSRF) may be promoted as an appropriate fertilization method to improve the farming productivity and profitability of sugarcane in Indonesia.

**Keywords:** Cane Production, Silicate Rock, Sugarcane, Si Fertilizer, Sugar Yield

## 1. Introduction

Sugarcane (*Saccharum officinarum*) is an important cash crop in Indonesia. During the last decade, the status of Indonesia has switched from an exporting to importing country for sugar. The situation is not only caused by the increase in national demand, but also by the decline of domestic production of sugar. A substantial effort to reach sustainable self-supporting for sugar is by implementing the specific recommendation of the application of multi-nutrient and organic fertilizers [1]. However, particular attention should also be given to the use of silicate (Si) - a commonly neglected nutrient but so much beneficial for sugarcane production.

In the farming of sugarcane, the use of N, P, and K, or NPK fertilizers is essential because the plant requires a large amount of those nutrients. Nevertheless, continuous application of those nutrients at high rates in the successive-monoculture farming system can deplete the other essential nutrients [2]. Moreover, sugarcane is a silicate-accumulator plant [2], absorbing much more Si than N, P, or K [3, 4, 5]. Many researchers reported that the application of Si fertilizers improves cane production [6, 7, 8]. The use of Si fertilizers may also suppress pest and

disease attacks [9, 10, 11, 12] and the harmful effects of saline soils on plant growth [13, 14, 15]. Based on those references, the use of Si-based fertilizers containing all plant-essential nutrients may be proposed as an essential part of the exertions for improving the production of sugarcane in Indonesia. The question is, which kind of fertilizer package is suitable especially for the smallholder farmers of sugarcane.

The farming business of sugarcane in Indonesia is mostly (54%) operated by smallholder farmers, and partly by the state (16%) and private (30%) companies [16]. But, not many of the smallholders invests the Si-based fertilizers in sugarcane farm. Besides the lack of their knowledge, the foremost cause of the case is the high cost of available Si fertilizers. Thus, the use of cheap but effective Si-based fertilizers could be the best solution, and the innovation of producing Si-fertilizers based on local resources should become a vital part of the development program of sugarcane in Indonesia.

During the last several decades, there has been an increasing interest of agronomists worldwide, including in Indonesia, to the utilization of Si-containing materials for use as a multi-nutrient fertilizer. Those include ground silicate rocks [17], calcium silicate slag [18, 19, 20, 21, 4], boiler ash, furnace slag, and zeolite [8], and steel slag [22] as the sources for Si-containing fertilizer. However, the solubility of Si from those materials is commonly very low. Consequently, the application of those materials requires a very high rate (> 20 $t.ha^{-}$).

A promising effective fertilizer made from basaltic-silicate rocks is liquid-silicate rock fertilizer (LSRF) [23]. The results of a field test [24] show that the foliar application of LSRF, in addition to the basal fertilizers of N, P, and K, on sugarcane doubled the cane production reaching 184 $t.ha^{-}$, and increased sugar rendement and yield respectively reaching 8.4% and 15.4 $t.ha^{-}$. However, sugarcane is a high and dense-growing plant so that the foliar application of LSRF requires a particular tool and high cost. For this reason, we have developed the other silicate rock-based fertilizers in granule form, i.e., $NP_{70}$-Si and $NP_{100}$-Si. The effectiveness of those fertilizers for sugarcane was evaluated in this present research.

The primary objective of this research was to evaluate the agronomic and economic effectiveness of the newly developed Si fertilizers, i.e., LSRF, $NP_{70}$-Si, and $NP_{100}$-Si, to improve sugarcane production.

# 2. Materials and Method

## *2.1. Site Description*

This research was carried out in the research station of the state company of PTPN X in Kediri, East Java, Indonesia (7°5234.1"S 112°1011.1"E) for 12 months (April 2017 to May 2018). The land consisted of fairly deep (30 – 40 cm) sandy textured soil (Udipsamments), being characterized by slightly acid (pH 5.4), high N total (0.13%) and Bray-extractable P (87 $mg.kg^{-}$), low cation exchange capacity (6.1 $cmol.kg^{-}$), and fair to slightly high exchangeable $Na^{+}$, $K^{+}$, $Ca^{+2}$, and $Mg^{+2}$, respectively, were 1.0, 0.98, 3.3, and 0.8 $cmol.kg^{-}$.

## *2.2. Experimental Design*

This experiment was laid out in a randomized complete block design with five replications (blocks), and the treatments were five fertilizer packages described in Table 1. The planted cane seedling was PS 881 variety. The cane seeding was cut for use as the seed which each cut contained three seed buds. Each experimental plot consisted of 10 rows of 16-m length, and the distance between rows was 1.35 m. The seedling canes containing 48 buds were planted in each row; thus, there were 480 buds per plot of 216 $m^2$.

***Table 1.*** *The description of fertilizer packages (treatments) used in this current experiment.*

| Treatment Code | Description | Application Method |
|---|---|---|
| F-0 | Reference fertilizer* (NPK): 160 N + 72 $P_2O_5$ + 150 $K_2O$ $kg.ha^{-}$ | Applied twice at 7 and 30 days after planting (d.a.p) through the soil at 5-cm depth. |
| F-1 | F-0 + 24-L LSRF (NPK + LSRF) | LSRF was applied onto the leaf and stem 4 times at 21, 35, 50, and 77 d.a.p. |
| F-2 | F-0 + 24-L LSRF (NPK + LSRF) | LSRF was applied twice through the soil at 7 and 30 d.a.p. |
| F-4. | $NP_{70}$-Si (a granule fertilizer), 800 $kg.ha^{-}$. | $NP_{70}$-Si was applied twice through the soil, 2 x 50% of the rate, at 7 and 30 d.a.p. |
| F-5. | $NP_{100}$-Si (a granule fertilizer) 800 $kg.ha^{-}$ | $NP_{100}$-Si was applied twice through the soil, 2 x 50% of the rate, at 7 and 30 d.a.p. |

* NPK in this research was a combination of 160 N + 72 $P_2O_5$ + 150 $K_2O$ ($kg.ha^{-}$), respectively, in forms of urea, TSP, and KCl.

## *2.3. Data Collection and Analysis*

The main observed parameters were the growth and yield components. The growth components were (1) germination rate of seed buds observed at one month after planting (m.a.p), (2) plant height (cane length) of 3, 6, and 9 m.a.p, (3) cane diameter of 6 and 9 m.a.p., and (4) plant population of 3, 6, and 9 m.a.p. The observed yield components were (1) cane production harvested at 12 m.a.p, (2) brix (the sweetness or the percentage of sugar relative to the cane juice), (3) rendement (the percentage of sucrose in the cane), and (4) sugar yield.

Data of each observed parameter were subjected to the analysis of variant (ANOVA), followed by the analysis of least significant difference (LSD) at $\alpha = 0.05$ for the parameters that were significantly affected by the treatments. The relative effectiveness of each fertilizer package was calculated as the percentage of cane production (for agronomic effectiveness) and of farming benefit (for economic effectiveness) over that for the reference fertilizer package (F-0).

# 3. Results and Discussion

## *3.1. Growth Components*

The effect of different fertilizer packages on the growth components of sugarcane is summarized in Table 2. The treatments did not significantly affect the growth components but the percentage of germinating seed buds. The germination of seed buds receiving $NP_{100}$-Si fertilizers was about 6% higher than for that of the reference fertilizer (NPK).

As shown in Table 2, the percentages of germinating seed buds receiving the treatments of F-0, F-1, and F-2 were nearly the same (about 45.6%), whereas for that of F-3 and F-4 were 47.2 – 49.6%, or 3 – 4% higher than for that of the reference (F-0). However, the plant population of 3, 6, and 9 months was not significantly affected by the application of the treatments. The plant population of the 3 months ranged from about 123 to 135 x $10^3$ ha$^-$, whereas for that of 6 and 9 months were about the same (62 x $10^3$ ha$^-$). The diameter of cane reached the maximum value (about 31 mm) after the plant was six-month-old, and that was not affected by the treatments. Similarly, the cane length (plant high) was not affected by the treatments, reaching a maximum extent of about 115 – 118 cm after 6-month old.

Based on the results of simple linear correlation analyses, there was no close correlation or cause-effect relationship between the germinating rates of seedling cane with plant population, height, or cane diameter. It seems that sufficient supply of the macronutrients of N, P, and K from all fertilizer packages for sugarcane provides no difference in growth components.

### *3.2. Yield Components*

The effect of different fertilizer packages on the yield components of sugarcane is summarized in Table 3. The yield components significantly affected by the treatments were only the cane production and sugar yield.

As shown in Table 3, the application of LSRF (in addition to NPK) applied on the leaf (F-1) or through the soil (F-2) provided the cane production for about 105 t.ha- or 6% higher than for that of the reference F-0 (NPK) for about 99 t.ha-. Meanwhile, the application of the granulated silicate rock fertilizers ($NP_{70}$-Si and $NP_{100}$-Si) produced, respectively, 93 and 103 t.ha$^-$, and those productions were the same to that of the reference F-0. The trend of sugar yield was similar to that of cane production. In contrast, the percentage of sugar brix dan rendement were not affected by the use of different fertilizer packages, which respectively were about 18 and 7.7%.

***Table 2.*** *The effects of fertilizer packages on the growth components of sugarcane.*

| Parameter | Unit | Fertilizer Packages | | | | | $LSD_{\alpha=0.05}$ |
|---|---|---|---|---|---|---|---|
| | | F-0 | F-1 | F-2 | F-3 | F-4 | |
| **Seed Germination** | **%** | **45.6 a** | **45.9 a** | **45.6 a** | **47.2 ab** | **48.6 b** | **1.8** |
| Plant Population: | | | | | | | |
| 3 months | $10^3$.ha$^-$ | 135.3 | 131.4 | 123.5 | 125.2 | 126.4 | - |
| 6 months | $10^3$.ha$^-$ | 64.7 | 62.1 | 62.6 | 61.7 | 62.0 | - |
| 9 months | $10^3$.ha$^-$ | 67.5 | 65.3 | 63.3 | 65.5 | 64.0 | - |
| Cane Diameter: | | | | 30.9 31.6 | 31.1 31.2 | | |
| 6 months | mm | 30.2 | 31.1 | | | 31.2 | - |
| 9 months | mm | 30.3 | 31.3 | | | 31.3 | - |
| Plant Height: | | | | | | | |
| 6 months | cm | 115.4 | 115.5 | 118.0 | 115.6 | 118.0 | - |
| 9 months | cm | 269.1 | 275.2 | 261.9 | 270.9 | 274.3 | - |

The values in the same row, labelled with the same letter, are not significantly different based on its $LSD_{\alpha=0.05}$

***Table 3.*** *The effects of fertilizer package on the yield components of sugarcane.*

| Parameter | Unit | Fertilizer Packages | | | | | $LSD_{\alpha=0.05}$ |
|---|---|---|---|---|---|---|---|
| | | F-0 | F-1 | F-2 | F-3 | F-4 | |
| Cane production | t.ha$^-$ | 98.9 b | 104.6 c | 105.2 c | 92.5 a | 102.5 bc | 6.7 |
| RAE-cane production | % | 100.0 | 105.8 | 106.4 | 93.5 | 103.6 | - |
| Sugar yield | t.ha$^-$ | 7.7 b | 7.9 bc | 8.1 c | 7.0 a | 7.9 bc | 0.5 |
| RAE-sugar yield | (%) | 100.0 | 102.6 | 105.2 | 90.9 | 102.4 | - |
| Brix | (%) | 8.0 | 17.9 | 17.8 | 18.6 | 18.3 | - |
| Rendement | (%) | 7.8 | 7.6 | 7.7 | 7.5 | 7.7 | - |

The values in the same row, labelled with the same letter, are not significantly different based on its $LSD_{\alpha=0.05}$.
RAE = relative agronomic effectiveness

***Table 4.*** *Summary of economic analysis of sugarcane farming.*

| Components | Fertilizer Packages | | | | |
|---|---|---|---|---|---|
| | F-0 | F-1 | F-2 | F-3 | F-4 |
| Materials ($M_{IDR}$) | 23.65 | 25.57 | 25.57 | 24.75 | 24.75 |
| Operational ($M_{IDR}$) | 6.00 | 6.70 | 6.00 | 6.00 | 6.00 |
| Total cost ($M_{IDR}$) | 29.650 | 32.270 | 31.570 | 30.750 | 30.750 |
| Product (t.ha$^-$) | 98.93 | 104.58 | 105.21 | 92.47 | 102.05 |
| Rendement (%) | 7.8 | 7.6 | 7.7 | 7.5 | 7.7 |
| Prod. Price ($M_{IDR}$.t$^-$) | 0.65 | 0.65 | 0.65 | 0.65 | 0.65 |

| Components | Fertilizer Packages | | | | |
|---|---|---|---|---|---|
| | F-0 | F-1 | F-2 | F-3 | F-4 |
| Prod. value ($M_{IDR}$) | 64.304 | 67.978 | 68.388 | 60.105 | 66.331 |
| Benefit ($M_{IDR}.ha^{-}.y^{-}$) | 34.654 | 35.708 | 36.818 | 29.355 | 35.581 |
| REE – benefit (%) | 100.0 | 103.0 | 106.2 | 84.7 | 102.7 |

$M_{IDR}$ = millions of Indonesian dollar (Rupiah), 1 US$ ~ 14.500 IDR

### *3.3. Effectiveness of Silicate Rock-Based Fertilizers*

The effectiveness of the silicate-rock based fertilizers relative to the reference fertilizer package, based on agronomic (RAE) and economic (REE) parameters, respectively are shown in Tables 3 and 4. The trends of RAE and REE are similar, which is F-2 > F-1 > F-4 > F-0 > F3. Based on those evaluations, the most effective fertilizer package for sugarcane is F-2 (NPK + LSRF applied through the soil). Adding LSRF to the basalt fertilizer (NPK) improved about 6% of sugarcane production or cash benefit of the farming. Thus, the fertilizer package of NPK + LSRF may be promoted as an appropriate fertilizer package to improve productivity as well as the profitability of the farming sugarcane.

Comparing to the result of earlier research [24] producing about 184 $t.ha^{-}$ of cane, the 6-% or 6-$t.ha^{-}$ improvement of cane production in this present research is relatively small. Thus, further research is required to be able to reach higher or maximum sugar production; and it may be focused on defining the optimum fertilizer type and application, plant variety, or/and water supply.

## 4. Conclusion

The application of 5 different fertilizer packages, which were (NPK), (NPK+ LSRF applied on plant leaf), (NPK + LSRF applied through the soil), $NP_{75}$-Si, and $NP_{100}$-Si, significantly affected cane production, and sugar yield, but did not for the other observed growth and yield components of sugarcane grown on Udipsamments. Based on either its agronomic or economic effectiveness, the application of NPK + LSRF is the best fertilization method in this research. Therefore, the use of the fertilizer package (160-kg N + 72-kg $P_2O_5$ + 150-kg $K_2O$ + 25-L LSRF per ha) may be proposed as an appropriate method. Indeed, further researches associating to the identification of optimum rate of fertilizer application for different plant varieties and watering strategy are required to obtain higher production of sugarcane.

## Acknowledgements

We acknowledge the Directorate General of Research and Technology, Ministry of Research, Technology and Higher Education, The Republic of Indonesia, for its financial support to this research. Also, we thank Balitas-Malang, LPPM-University of Mataram, PTPN X, and PT. JIA Agro Indonesia for their supports to this research.

## References

[1] Kementan RI. (2015). Permentan No: 19/Permen-tan/HK. 140/4/2015 tentang rencana strategis Kementerian Pertanian tahun 2015-2019.

[2] Epstein, E. (1999). Silicon. Ann. Rev. Plant Physiol., Plant Mol. Biol., 50: 641-664.

[3] Samuels, G. (1969). Silicon and sugar. Sugar y Azucar, 65: 25-29.

[4] Anderson, D. L., Snyder, G. H. and Martin, F. G. (1991). Multi-year response of sugarcane to calcium silicate slag on everglades histosols. Agronomy Journal 83: 870-874.

[5] Keeping, J. H. and Meyer, M. G. (2002). Calcium silicate enhances resistance of sugarcane to the African stalk borer Eldana saccharina Walker (Lepidoptera: Pyralidae). Agric. Forest Enthom. 4: 265-274.

[6] Du Preez, P. (1970). The effect of silica on cane growth. Proc. South Afr. Sugar Tech. Assoc. June 1970. p. 183-188.

[7] Bernal, J. (2008). Response of rice and sugarcane to magnesium silicate in different soils of Colombia, South America. Abstract. In Int. Proc. South Africa. 2008. p. 26.

[8] Toharisman, A., Mulyadi, M., and Rasjid, A. (2010). A new formulated silicon fertilizer for better sugarcane production. Proc. Int. Soc. Sugar Cane Technol. 27: 1-3.

[9] Savant, N. K., Korndörfer, G. H., Datnoff, L. E. and Snyder, G. H. (1999). Silicon nutrition and sugarcane production: a review. Journal of Plant and Nutr., 22: 1853-1903.

[10] Berry, S. D. and Sala, S. (2008). Silicone and plant-parasitic nematodes in sugarcane. Abstract. Int. Proc. South Africa. 2008. p. 27.

[11] Biel, K., Matichenkov, V. and Fomina, I. (2008). Role of silicon in plant defensive system. Abstract. Int. Proc. South Africa. 2008. p. 28.

[12] Ma, J. F. (2004). Role of silicon in enhancing the resistance of plants to biotic and abiotic stresses. Soil Sci Plant Nutr. 50: 11-18.

[13] Kosobryukhov, A, Shabnova, N., Kreslavsky, V. and Matichenkov, V. (2008). Active silicon for increasing salt tolerance in plants. Abstract. Int. Proc. South Africa. 2008. p 56.

[14] Liang YC, Chen QR, Liu Q, Zhang WH, Ding RX (2003). Exogenous silicon (Si) increases antioxidant enzyme activity and reduces lipid peroxidation in roots of salt-stressed barley (Hordeum vulgare L.). J. Plant Physiol. 160: 1157-1164.

[15] Ali, A., Shahzad, M. A., Basra, S. H., Iqbal, J., Ahmad, M. and Sarwar, M. (2012). Salt stress alleviation in field crops through nutritional supplementation of silicon. Pakistan Journal of Nutrition, 11 (8): 637-655.

[16] BPS. (2017). Statistik tebu Indonesia (*Indonesian sugarcane statistics*). Publ. No. 05130.1805.

[17] de Villiers, O. H. (1961) Soil rejuvenation with crushed basalt in Mauritius. Int. Sugar. J. 63: 363-364.

[18] Clements, H. F. (1965). The roles of calcium silicate slag in sugar cane growth. Repts. Hawaiian. Sugar Tech. 25: 103-126.

[19] Ayres, A. S. (1966). Calcium silicate slag as a growth stimulant for sugarcane on low-silicon soils. Soil Sci. 101 (3): 216-227.

[20] Alvares, J. and Gasco, G. J. 1979. Calcium silicate slag for sugar cane in Florida. Part II-Economic response. Sugar y Azucar. 74: 32-35.

[21] Anderson, D. L., Jones, D. B., and Snyder, G. H. 1987. Response of a rice-sugarcane rotation to calcium silicate slag on Everglades Histosols. Agron. J. 79: 531-535.

[22] Allorerung, D. 1989. Influence of steel slag application to red/yellow podzolic soils on soil chemical characteristics, nutrient content and uptake, and yield of sugarcane plantations (Saccharum officinarum L.). Bull. P3G. Indonesia. 136: 14-42.

[23] Priyono, J. 2014. Kompilasi hasil uji efektivitas penggunaan pupuk silikat cair pada beberapa jenis komoditi tanaman pangan, hortikultura, dan perkebunan (2012 –2014) (*unpublished report*).

[24] Djajadi, Hidayati, S. N., Syaputra, R., dan Supriyadi. (2016). Pengaruh pemupukan Si cair terhadap produksi dan rendemen tebu. Jurnal Penelitian Tanaman Industri. 22 (4): 176 -181.

**Journal Name**
2017; X(X): XX-XX
Published online MM DD 2017 (http://www.sciencepublishinggroup.com)
doi: 10.11648/j.XXXX.2017XXXX.XX

# Paper Title (SciencePG-Paper-Title)

**Authors Name[1, *], Authors Name[1, 2]**

[1]Department of University, Faculty of University, University, City, Country
[2]Department Name of Institute/Organization, Name of Institute/Organization, City, Country

**Email address:**
email1@authorname.com (author name1), email2@authorname.com (author name2)
[*]Corresponding author

**To cite this article:**
Authors Name. Paper Title. *International Journal of XXXXXX.* Vol. x, No. x, 2017, pp. x-x. doi: 10.11648/j.xxx.xxxxxxxx.xx.

**Received**: MM DD, 2017; **Accepted**: MM DD, 2017; **Published**: MM DD, 2017

**Abstract:** This electronic document is a "live" template. The various components of your paper [title, text, heads, etc.] are already defined on the style sheet, as illustrated by the portions given in this document. The abstract should be between 200 and 400 words.

**Keywords:** Component, Formatting, Style, Styling, Insert

## 1. Introduction

This template, created in MS Word 2000/2007/2010 and saved as "Word 97-2000 & 6.0/95 – RTF" for the PC, provides authors with most of the formatting specifications needed for preparing electronic versions of their papers. All standard paper components have been specified for three reasons: (1) ease of use when formatting individual papers, (2) automatic compliance to electronic requirements that facilitate the concurrent or later production of electronic products, and (3) conformity of style throughout a journal publication. Margins, column widths, line spacing, and type styles are built-in; examples of the type styles are provided throughout this document. Some components, such as multi-leveled equations, graphics, and tables are not prescribed, although the various table text styles are provided. The formatter will need to create these components, incorporating the applicable criteria that follow.

## 2. Custom Title (SciencePG-Level1-Multiple-line)

### *2.1. SciencePG-Level2-Single-line*

First, confirm that you have the correct template for your paper size. This template has been tailored for output on the A4 paper size.

### *2.2. SciencePG-Level2-Single-line*

The template is used to format your paper and style the text. All margins, column widths, line spaces, and text fonts are prescribed; please do not alter them. You may note peculiarities. For example, the head margin in this template measures proportionately more than is customary. This measurement and others are deliberate, using specifications that anticipate your paper as one part of the entire publication, and not as an independent document. Please do not revise any of the current designations.

#### *2.2.1. SciencePG-Level3-Single-line*

Before you begin to format your paper, first write and save the content as a separate text file. Keep your text and graphic files separate until after the text has been formatted and styled. Do not use hard tabs, and limit use of hard returns to only one return at the end of a paragraph. Do not add any kind of pagination anywhere in the paper. Do not number text heads-the template will do that for you.

#### *2.2.2. Abbreviations (SciencePG-Level3-Single-line)*

Define abbreviations and acronyms the first time they are used in the text, even after they have been defined in the abstract. Abbreviations such as IEEE, SI, MKS, CGS, sc, dc, and rms do not have to be defined. Do not use abbreviations in the title or heads unless they are unavoidable.

#### *2.2.3. Equations (SciencePG-Level3-Single-line)*

The equations are an exception to the prescribed

**Commented [A2]:**
1) The title should be at least 7 words but no more than 25 words.
2) The title is suggested to be a declarative sentence, without punctuation at the end.

**Commented [A3]:**
1) Full English name.
2) The author's name cannot be only one word.
3) No professional title before the authors name.

**Commented [A4]:**
The affiliation of the author should include Department/Faculty, University/Institute/Organization, City and Country.

**Commented [A5]:**
Please write the corresponding author's name after each email address.

**Commented [A6]:**
1) **200 to 400** words in one paragraph;
2) No formulas;
3) No pictures;
4) No subsections.

**Commented [A7]:**
1) **3 to 8 words or phrases**;
2) Be separated by commas and not to exceed 3 lines.

**Commented [A8]:**
1) The headings or sub-headings should be numbered in order as the style as the template shows.
2) Each headings or sub-headings should not exceed **15 words**.
3) There should be at least two symmetrical sub-headings under one heading to keep the balance of the structure and content. For example, there should be at least two sub-heading (such as 2.2.1 and 2.2.2) under the heading 2.2.

specifications of this template. You will need to determine whether or not your equation should be typed using either the Times New Roman or the Symbol font (please no other font). To create multileveled equations, it may be necessary to treat the equation as a graphic and insert it into the text after your paper is styled.

Equation numbers, within parentheses, are to position flush right, as in (1), using a right tab stop. To make your equations more compact, you may use the solidus ( / ), the exp function, or appropriate exponents. Italicize Roman symbols for quantities and variables, but not Greek symbols. Use a long dash rather than a hyphen for a minus sign. Punctuate equations with commas or periods when they are part of a sentence, as in

$$X+Y=Z \quad (1)$$

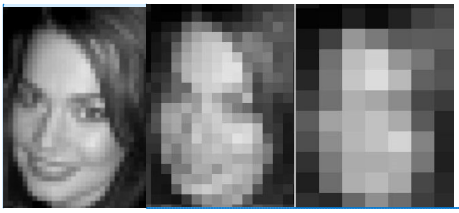
$$X_1\text{-}Y^2=R^* \quad (2)$$

Note that the equation is centered using a center tab stop. Be sure that the symbols in your equation have been defined before or immediately following the equation. Use "(1)", not "Eq. (1)" or "equation (1)", except at the beginning of a sentence: "Equation (1) is . . ."

## 3. SciencePG-Level1-Single-line

### *3.1. Figure (SciencePG-Level2-Single-line)*

Figure is as follows: Place figures and tables at the top and bottom of columns. Avoid placing them in the middle of columns. Large figures and tables may span across both columns. Figure captions should be below the figures; table heads should appear above the tables. Insert figures and tables after they are cited in the text. Use the "Figure 1", even at the beginning of a sentence.



(a) (b) (c)

***Figure 1.*** *There are three figures illustrated here.*

### *3.2. Table (SciencePG-Level2-Single-line)*

Table is as follows: Use words rather than symbols or abbreviations when writing Figure axis labels to avoid confusing the reader. As an example, write the quantity "Magnetization", or "Magnetization, M", not just "M".

***Table 1.*** *Table information*

| Column1 | Column2 |
|---|---|
| Row1 | Row1 |
| Row2 | Row2 |
| Row3 | Row3 |
| Row4 | Row4 |
| Row5 | Row5 |
| Row6 | Row6 |
| Row7 | Row7 |

## 4. SciencePG-Level1-Single-line

After the text edit has been completed, the paper is ready for the template. Duplicate the template file by using the Save As command, and use the naming convention prescribed by your conference for the name of your paper. In this newly created file, highlight all of the contents and import your prepared text file. You are now ready to style your paper; use the scroll down window on the left of the MS Word Formatting toolbar.

## 5. Reference

The template will number citations consecutively within brackets [1]. The sentence punctuation follows the bracket [2]. Refer simply to the reference number, as in [3]—do not use "Ref. [3]" or "reference [3]" except at the beginning of a sentence: "Reference [3] was the first . . ."

Number footnotes separately in superscripts. Place the actual footnote at the bottom of the column in which it was cited. Do not put footnotes in the reference list. Use letters for table footnotes.

Unless there are six authors or more give all authors names; do not use "et al.". Papers that have not been published, even if they have been submitted for publication, should be cited as "unpublished" [4]. Papers that have been accepted for publication should be cited as "in press" [5]. Capitalize only the first word in a paper title, except for proper nouns and element symbols.

For papers published in translation journals, please give the English citation first, followed by the original foreign-language citation [6].

***Table 2.*** *Tables may span across both columns*

| Column1 | Column2 | Column3 | Column4 | Column5 |
|---|---|---|---|---|
| Cell 1 1 | Cell 1 2 | Cell 1 3 | Cell 1 4 | Cell 1 5 |
| Cell 2 1 | Cell 2 2 | Cell 2 3 | Cell 2 4 | Cell 2 5 |
| Cell 3 1 | Cell 3 2 | Cell 3 3 | Cell 3 4 | Cell 3 5 |
| Cell 4 1 | Cell 4 2 | Cell 4 3 | Cell 4 4 | Cell 4 5 |

+ The example for this table. The example for this table. The example for this table. The example for this table. The example for this table. The example for this table. The example for this table..

If the square-shaped pixel size in our images was 8 × 8 screen-pixels, this amounted to about 21 pixels per face quantization (an equivalent of about 10.5 cycles/face). With this level of image detail, all three basic varieties of configural information (hange of spatial quantization between 11

**Commented [A14]:**
1) Tables should be numbered in order with clear annotations;
2) No image format;
3) All tables should be editable;
4) Tables should be numbered just with Arabic numbers without letters in this unified style, such as Table 1, Table 2, Table 3 and so on.
5) The annotation to the table should be written in front of the table.

**Commented [A9]:**
Be clear; No image format

**Commented [A10]:**
1) The superscript and subscript should be clearly shown in a formula.
2) The formula should be numbered in order with Arabic numerals, and the number should be put in brackets after each formula.

**Commented [A15]:**
The references referred to in the main text of the paper should be written in the unified form, such as [1], [2], [3] and so on. For example, [1] is written in a normal style not in superscript "[1]".

**Commented [A11]:**
1) Figures should be numbered in order with clear annotations;
2) Figures should be numbered just with Arabic numbers without letters in this unified style, such as Figure 1, Figure 2, Figure 3 and so on.

**Commented [A12]:**
1) The annotation should be editable and outside of a picture.
2) The annotation to the figure should be written under the figure.

**Commented [A13]:**
The main text must be clearly paragraphed.

pixels/face and 6 pixels/face levels altogether indicate that this ERP- component is especially sensitive to the first-order configural cues. Some other works have supported both of these ideas [6, 16, 25].

## Acknowledgements

The preferred spelling of the word “acknowledgment” in America is without an “e” after the “g”. Avoid the stilted expression, “One of us (R. B. G.) thanks . . .” Instead, try “R. B. G. thanks”. Put sponsor acknowledgments in the unnumbered footnote on the first page.

## References

[1] G. Eason, B. Noble, and I. N. Sneddon, “On certain integrals of Lipschitz-Hankel type involving products of Bessel functions,” Phil. Trans. Roy. Soc. London, vol. A247, pp. 529–551, April 1955. (references)

[2] J. Clerk Maxwell, A Treatise on Electricity and Magnetism, 3rd ed., vol. 2. Oxford: Clarendon, 1892, pp.68–73.

[3] I. S. Jacobs and C. P. Bean, “Fine particles, thin films and exchange anisotropy,” in Magnetism, vol. III, G. T. Rado and H. Suhl, Eds. New York: Academic, 1963, pp. 271–350.

[4] K. Elissa, “Title of paper if known,” unpublished.

[5] R. Nicole, “Title of paper with only first word capitalized,” J. Name Stand. Abbrev., in press.

[6] Y. Yorozu, M. Hirano, K. Oka, and Y. Tagawa, “Electron spectroscopy studies on magneto-optical media and plastic substrate interface,” IEEE Transl. J. Magn. Japan, vol. 2, pp. 740–741, August 1987 [Digests 9th Annual Conf. Magnetics Japan, p. 301, 1982].

[7] M. Young, The Technical Writers Handbook. Mill Valle y, CA: University Science, 198.

[8] Krejcie, R. V. and D. W. Morgan (1970) Determining Sample Sizes for Research Activities. Educational and Psychological Measurement 30, 607-610.

[9] Kass, R. E. and A. E. Raftery (1995). Bayes Factors. Journal of the American Statistical Association 90, 773–794.

[10] Spiegelhalter, D. J., N. G. Best, B. P. Carlin, and A. van der Linde (2002). Bayesian Measures of Model Complexity and Fit (with discussion). Journal of the Royal Statistical Society: Series B 64, 583–639.

[11] 22] Ebenebe, C. I., Anigbogu, C. C., Anizoba, M. A. and Ufele, A. N. (2013). Effect of various levels of Moringa Leaf Meal on the Egg Quality of Isa Brown Breed of Layers. Advances in Life Sciences and Technology 14: 45-49.

[12] Fahey, J. W., Zakmann, A. T., and Talalay, P. (2001). The chemical diversity and distribution of glucosinolates and Isothiocyanates among plants. Corrigendum Phytochemistry, 59: 200-237.

[13] Greg, M. E. (2008). Effect of enzymes on cellulose, European Journal of Applied Microbiology Biotechnology, 40: 167 -171.

[14] Onunkwo, D. N and George, O. S (2015). Effects of Moringaoleifera leaf meal on the growth performance and carcass characteristics of broiler birds. IOSR Journal of Agriculture and Veterinary Science, 8 (3II): 63-66.

[15] El Tazi, S. M. A. (2014). Effect of feeding different levels of Moringaoleifera leaf meal on the performance and carcass quality of broiler chicks. International Journal of Science and Research, 3 (5):147-151.

**Commented [A16]:**
1) No pictures or formulas in reference.
2) Please list at least 15 pieces of references.

**Commented [A17]:** The reference should be numbered in the unified form, such as [1], [2], [3] and so on.

# (tanpa subjek)

2 pesan

**joko priyono** <joko_priyono@unram.ac.id> 27 April 2020 03.51
Kepada: Prereview SPGManuscript <revision02@sciencepg.com>

Dear editor,
Please find the attached file of revised manuscript (3431184). Note: the yellow-highlighted words are my corrections. The corrections of % is just adding a space bar, e.g., 5% to 5 %.
I hope the revision meets with your publication requirement.
Thank you for your great attention to my paper.

Best regards,
Joko Priyono
corresponding author

**IJAAS_3431184_20200412-revised Joko.doc**
206K

**Prereview SPGManuscript** <revision02@sciencepg.com> 27 April 2020 10.13
Kepada: joko priyono <joko_priyono@unram.ac.id>

Dear Joko Priyono,

Thanks for your email.

We have received your revised manuscript [3431184].

Later we will send you the acceptance letter if there are no other problems.

**For the further procedure, we'll contact you via**
**acceptanceletter01@sciencepg.com**

Any questions, please feel free to contact us.

Best regards,

Judy Garland
Editorial assistant
Science Publishing Group, USA

joko priyono <joko_priyono@unram.ac.id> 于2020年4月27日周一 上午3:51写道:
[Kutipan teks disembunyikan]

*International Journal of Applied Agricultural Sciences (IJAAS)*

http://www.sciencepublishinggroup.com/j/ijaas

The Official Publication of Science Publishing Group

# Manuscript Review Form

## Instructions to Reviewers:

Please remember that all materials submitted for consideration to *IJAAS* are confidential, and should not be distributed, shared, used or otherwise supplied to third parties prior to publication.

Tell the Editors if there is any conflict of interest in reviewing of the paper.

Please phrase your reviews politely; even 'bad' papers represent a lot of work on the part of the authors. The review may be the basis for further revisions of the paper or the work that the paper reports. We all know how hurtful a needlessly negative review can be, and how helpful a positive one can be; please try to bear that in mind when you are writing yours. Meanwhile the author will give a feedback of the reviewer's evaluation to the Editors. It provides the evidence for Editors to decide whether the reviewer is qualified.

Please respond within the allotted time so that we can give the authors timely responses and feedback.

| | |
|---|---|
| **Manuscript Number:** | **IJAAS_3431184_20200412** |
| **Article Title:** | **Silicate Rock-Based Fertilizers Improved the Production of Sugarcane Grown on Udipsamments Kediri, East Java, Indonesia** |

## Evaluation Criteria:

Please provide a numeric rating on a 5-point scale for each evaluation item, along with a brief rationale for each 3-lesspoint rating.

# *International Journal of Applied Agricultural Sciences (IJAAS)*

## Manuscript Review Form

| ***Questions*** | ***Rating Result*** [Poor] **1-5** [Excellent] |
|---|---|
| **1. The article title is appropriate.** *(brief rationale for 3-less point rating)* | |
| | |
| **2. The abstract accurately reflects the content.** *(brief rationale for 3-less point rating)* | |
| | |
| **3. There are few grammatical errors and spelling mistakes in this article.** *(brief rationale for 3-less point rating)* | |
| | |
| **4. The purpose or purported significance of the article is explicitly stated.** *(brief rationale for 3-less point rating)* | |
| | |
| **5. The literature review and research study methods are explained clearly.** *(brief rationale for 3-less point rating)* | |
| | |
| **6. The research study methods are sound and appropriate.** *(brief rationale for 3-less point rating)* | |
| | |
| **7. All figures, tables, and photos are necessary and appropriate.** *(brief rationale for 3-less point rating)* | |
| | |
| **8. The conclusions or summary are accurate and supported by the content.** *(brief rationale for 3-less point rating)* | |
| | |
| **9. The references are comprehensive and appropriate.** *(brief rationale for 3-less point rating)* | |
| | |
| **10. There is enough new content in this paper to distinguish it from other works.** *(brief rationale for 3-less point rating)* | |
| | |

*International Journal of Applied Agricultural Sciences (IJAAS)*

# Manuscript Review Form

| | |
|---|---|
| **11. If the paper is an extended version of a conference paper, the submission provides enough new material for journal publication.**<br>*(brief rationale for 3-less point rating)* | |
| | |

## Specific Reviewer Comments and Suggestions:

Note that these comments may be in addition to or in lieu of reviewer comments inserted into the text of the article. Use as many lines as needed.

| |
|---|
| **a) Please give a frank account of the strengths and weaknesses of the article (in 100-200 words):** |
| Generally speaking, the author has made a detailed description and research on this problem. The whole structure and logicality of this paper are quite good. The Materials and Methods section provides sufficient information. Meanwhile, the detailed discussion is given. In addition, the authors also referred to the latest research articles. So it can be accepted for publication without major changes. Please proofread the paper carefully to correct mistakes even minor ones. |
| **b) Please provide detailed suggestions on how to improve the paper (in 100-200 words):**<br>*-Main problems of the article (e.g. Methodology, Interpretation)*<br>*-In order of seriousness/relevance* |
| 1. Please check the full text carefully to ensure that there are no spelling and grammatical errors, and that the language style is rigorous and objective, which meets the requirements of academic papers. |
| **c) Minor comments (if any)**<br>*-Missing references, Stylistic problems, Typos, Misleading Captions, etc.* |
| 1. Please check and confirm whether the names of authors are correct.<br>2. The information of your affiliation should include 4 parts "Department/Faculty, University/Institute, City, Country". For example:<br>Harvard Business School, Harvard University, Cambridge, the United States<br>Please check and revise.<br>3. When there are two or more sources cited in a same sentence or paragraph, please enclose all the reference numbers in one bracket, such as [2, 4, 7, 8], [2, 4, 7-10] and [6-8]. Please check and revise. |

## Confidential Comments (if any):

Note that any comments in this section will not be shown to the authors.

| |
|---|
| |

## Authors' Feedback of Reviewer's Work to SciencePG

# *International Journal of Applied Agricultural Sciences (IJAAS)*

## Manuscript Review Form

| **Specific evaluation to the Reviewer's review result** | ***Rating Result***<br><br>[Poor] **1-5** [Excellent] |
|---|---|
| | |

# From SciencePG: Publishing Notification for Your Paper [3431184 ]

3 pesan

**Letter Acceptance** <acceptanceletter01@sciencepg.com> 22 Mei 2020 14.00
Kepada: joko priyono <joko_priyono@unram.ac.id>, jokotanahunram@gmail.com

Dear Joko Priyono,

We are glad to inform you that your paper:
Paper Number: 3431184
Paper Title: Silicate Rock-Based Fertilizers Improved the Production of Sugarcane Grown on Udipsamments Kediri, East Java, Indonesia
has been published in ***International Journal of Applied Agricultural Sciences***. Here is the link for your reference:
http://www.sciencepublishinggroup.com/journal/paperinfo?journalid=343&doi=10.11648/j.ijaas.20200602.11

Thanks for your contribution to the journal. We have a special offer of **20%** discount for your next paper if it is submitted before **May 22nd, 2021.**

Any questions, please feel free to let us know.

We are sincerely looking forward to cooperating with you again.

Best wishes,

Doris Taylor
Editorial assistant
Science Publishing Group, USA

---

**joko priyono** <joko_priyono@unram.ac.id> 22 Mei 2020 16.38
Kepada: Letter Acceptance <acceptanceletter01@sciencepg.com>
Cc: Joko Priyono <jokotanahunram@gmail.com>

Thanks a lot.
[Kutipan teks disembunyikan]

---

**Letter Acceptance** <acceptanceletter01@sciencepg.com> 27 Mei 2020 13.36
Kepada: joko priyono <joko_priyono@unram.ac.id>

Dear Joko Priyono,

Thanks for your email.

I hope I will have the opportunity to work with you again.

And hope you can recommend our journal to your colleagues and friends.

Your continued support will be greatly appreciated.

Best wishes,

Doris Taylor
Editorial assistant
Science Publishing Group, USA

[Kutipan teks disembunyikan]

joko priyono <joko_priyono@unram.ac.id>

# Acceptance Letter of Paper [3431184] from SciencePG

4 pesan

**Letter Acceptance** <acceptanceletter01@sciencepg.com> 27 April 2020 15.57
Kepada: joko_priyono@unram.ac.id, jokotanahunram@gmail.com

Dear Joko Priyono,

Your paper:
Paper Number: 3431184
Paper Title: Silicate Rock-Based Fertilizers Improved the Production of Sugarcane Grown on Udipsamments Kediri, East Java, Indonesia
Abstract: Improving the farming productivity and profitability of sugarcane in Indonesia requires appropriate fertilization method. So, three types of silicate rock-based fertilizers were developed and tested in field condition. The main ...
has been accepted and will be published in ***International Journal of Applied Agricultural Sciences***.

The normal article processing charges is 870 USD. For authors from Lower Middle Income Countries, we have a special offer. The article processing charge (APC) is 270.00 USD.

Please make the payment before **May 2nd, 2020.**

Three kinds of Payment methods are offered: **PayPal, Debit or Credit Card, Wire Transfer.**

Here is our PayPal account: paypal@sciencepublishinggroup.com
Here is the link: http://www.sciencepublishinggroup.com/payment/paypal

Here is the link to complete the payment directly via your debit or credit card:
http://www.sciencepublishinggroup.com/payment/card
(Note: The above payment function is provided by PayPal, a third-party payment platform. For authors who do not have a PayPal account, you can also pay with debit or credit card directly through this link.)

Please send back your payment receipt and provide us with the following information for cross-checking:
**Sender's Name (The sender is the person who sent us the APC)**
**Date of Payment**
**Payment Amount**
**The Country Where the Payment is Made**

We will send you the final edited paper within 20 working days for your final confirmation before publishing. If you have any further changes needed to be made, please revise them on it directly.

Should you have any questions, please feel free to contact us.

Best wishes,

Doris Taylor
Editorial assistant
Science Publishing Group, USA

**2 lampiran**

**One more way for payment (Wire Transfer).pdf**
75K

**Acceptance_Letter_3431184.pdf**
523K

**joko priyono** <joko_priyono@unram.ac.id> 27 April 2020 19.22
Kepada: Letter Acceptance <acceptanceletter01@sciencepg.com>

Cc: Joko Priyono <jokotanahunram@gmail.com>

Received, thank you.
[Kutipan teks disembunyikan]

---

**joko priyono** <joko_priyono@unram.ac.id> 28 April 2020 12.02
Kepada: Letter Acceptance <acceptanceletter01@sciencepg.com>

Dear editor,
Please find the copy of payment receipt for publication 3431184 (Joko Priyono et al):
Sender: Joko Priyono
Date of payment: 04/28/2020
Payment amount US$ 270.-
Country: Indonesia

Thank you.

Best regards,
[Kutipan teks disembunyikan]

**IJAAR publ fee 3431184 001.pdf**
749K

---

**Letter Acceptance** <acceptanceletter01@sciencepg.com> 29 April 2020 11.00
Kepada: joko priyono <joko_priyono@unram.ac.id>

Dear Joko Priyono,

Nice day.

This is to inform you that we have received the payment for your paper 3431184 .

Your final edited paper will be sent via this email by 15 days.

We appreciate your prompt payment.

Best wishes,

Doris Taylor
Editorial assistant
Science Publishing Group, USA

[Kutipan teks disembunyikan]

Science Publishing Group
1 Rockefeller Plaza, 10th and 11th Floors,
New York, NY 10020 U.S.A.

# Acceptance Letter

**Reference:** IJAAS **Date:** April 27, 2020

Dear Joko Priyono, Djajadi, Sulis Nur Hidayati, Sandi Gunawan, Ikhlas Suhada,

Thanks for your contribution to ***International Journal of Applied Agricultural Sciences (IJAAS)***.
(ISSN Print: 2469-7877; ISSN Online: 2469-7885)

We are pleased to inform you that your paper:
Manuscript Number: 3431184
Title: Silicate Rock-Based Fertilizers Improved the Production of Sugarcane Grown on Udipsamments Kediri, East Java, Indonesia
has been accepted for publishing. Congratulations!

Best Regards
*International Journal of Applied Agricultural Sciences (IJAAS)*
http://www.sciencepublishinggroup.com/j/ijaas
Science Publishing Group
Email: journal@sciencepublishinggroup.com

For and on behalf of
SCIENCE PUBLISHING GROUP INC.

Authorized Signature(s)