

Document details

[< Back to results](#) | 1 of 1[↗ Export](#) [↓ Download](#) [🖨 Print](#) [✉ E-mail](#) [Save to PDF](#) [☆ Add to List](#) [More... >](#)[View at Publisher](#)

IFMBE Proceedings

Volume 15, 2007, Pages 464-468

3rd Kuala Lumpur International Conference on Biomedical Engineering, Biomed 2006; Kuala Lumpur; Malaysia; 11 December 2006 through 14 December 2006; Code 118209

Bio-composting process development by SSF for utilization agro-industrial wastes (Conference Paper)Kabbashi, N.A.^a [✉](#), Zahangir Alam, M.D.^a, Ainuddin, M.^b [👤](#)^aInternational Islamic University, Bioenvironmental Engineering Research Unit (BERU), Department of Biotechnology Engineering, KL, Malaysia^bInternational Islamic University, Department of Biotechnology Engineering, KL, Malaysia**Abstract**[View references \(13\)](#)

The wastes derived from oil palm industries are generated every year and becoming a great concern, consequently, an urgent development of bio-composting process has been investigated. Bio-composting is an environmental friendly bioconversion process where its products could be utilized as plant growth enhancement. In Malaysia about 50 million tons of Palm Oil Mill Effluents (POME) and about 40 million tones of Oil Palm Biomass (OPB) in forms of empty fruit bunches (EFB), oil palm trunks (OPT), and oil palm fronds (OPF) are generated from palm oil industries every year, the management practice pose significant environmental problems. This study was concerning about simple composting process using selected substrates, POME and EFB plus wheat floor as a cosubstrate. The strains of *P. chrysosporium*, *T. harzianum*, *A. niger* (A 106, S 101), and *Penicillium* isolated from POME were used for effective bio-composting process. Tray bioreactor was used to evaluate the efficient composting process through solid state bioconversion. The composting time required to complete the process was two months and some parameters were determined to evaluate the compost quality. In the entire process merely, percentage of OM decreased to about 3% while total nitrogen content initially at 0.744 g/g increased to 2.96 g/g. The C/N ratio and GI achieved were 17 and 95% respectively. The maturity of the compost could be reflected by C/N ratio, pH and GI measurement. The use of POME and EFB as mixed substrates with the induced microorganisms is a new composting trial where it has been expected to receive a good result in order to overcome a conventional composting process. © Springer-Verlag Berlin Heidelberg 2007.

Author keywords

C/N ratio GI Microorganisms Oil palm waste SSF

Indexed keywords

Engineering controlled terms: Bioconversion Biomedical engineering Composting Effluents Industrial wastes Microbiology Microorganisms Oil shale Plant life extension Quality control Waste treatment Waste utilization

Compendex keywords: C/N ratio Environmental-friendly GI Oil palm waste Palm oil mill effluents Plant growth enhancements Solid state bioconversions SSF

Engineering main heading: Palm oil

Metrics [🕒](#) [View all metrics >](#)

8 Citations in Scopus

0 Field-Weighted Citation Impact

PlumX Metrics [▼](#)

Usage, Captures, Mentions, Social Media and Citations beyond Scopus.

Cited by 8 documents

Bacterial community shift for monitoring the co-composting of oil palm empty fruit bunch and palm oil mill effluent anaerobic sludge

Zainudin, M.H.M. , Ramli, N. , Hassan, M.A. (2017) *Journal of Industrial Microbiology and Biotechnology*

Effective composting of empty fruit bunches using potential *Trichoderma* strains

Siddiquee, S. , Shafawati, S.N. , Naher, L. (2017) *Biotechnology Reports*

A review of bioethanol production from plant-based waste biomass by yeast fermentation

Hossain, N. , Zaini, J.H. , Mahlia, T.M.I. (2017) *International Journal of Technology*

[View all 8 citing documents](#)

Inform me when this document is cited in Scopus:

[Set citation alert >](#)[Set citation feed >](#)**Related documents**

Studies of locally effective microorganisms (EM) to enhance the degradation of empty fruit

References (13)

[View in search results format >](#)

All [Export](#) [Print](#) [E-mail](#) [Save to PDF](#) [Create bibliography](#)

- 1 Ma, A.N., Cheah, S.A., Chow, M.C.
Current status of palm oil processing waste management
(1993) *Waste Management in Malaysia: Current Status and Prospects for Bioremediation*, pp. 111-136. Cited 35 times.
B.G. Yeoh et al. (Eds.)

- 2 (2003)
Malaysia

- 3 (2003)
Malaysia

- 4 Sharma, P.D., Fisher, P.J., Webster, J.
Critique of the chitin assay technique for the estimation of fungal biomass
(1997) *Transactions of British Mycological Society*, 69, pp. 479-483. Cited 62 times.

- 5 Miller, F.C.
(1993) *Composting as a Process Based on the Control of Ecologically Selective Factors in Soil Microbial Ecology*
Metting, F.B, ed.) Marcel Dekker

- 6 Hossain Molla, A., Fakhru'L-Razi, A., Zahangir Alam, M.
Evaluation of solid-state bioconversion of domestic wastewater sludge as a promising
environmental-friendly disposal technique

(2004) *Water Research*, 38 (19), pp. 4143-4152. Cited 30 times.
doi: 10.1016/j.watres.2004.08.002

[View at Publisher](#)

- 7 Charest, M.H., Beauchamp, C.J.
(2001) *Composting of De-Inking Paper Sludge with Poultry Manure at Three Nitrogen Levels Using Mechanical Turning: Behavior of Physico-Chemical Parameters*
Department de Phytologie, Faculti des Science de l Agriculture et de l Alimentation, Universite Laval, sainte-Foy, Que, Canada GIK 7P4

- 8 Mathur, S.P., Owen, G., Dinel, H., Schnitzer, M.
Determination of compost biomaturity. I. Literature review

(1993) *Biological Agriculture and Horticulture*, 10 (2), pp. 65-85. Cited 157 times.
doi: 10.1080/01448765.1993.9754655

[View at Publisher](#)

Characteristics of dewatered
sewage sludge and green waste
co-composting

Zhang, H. , Lv, D. , Wei, L.
(2011) *Proceedings of the 2011
2nd International Conference on
Digital Manufacturing and
Automation, ICDMA 2011*

Optimization of effective
composting process of oil palm
industrial waste by
lignocellulolytic fungi

Mohammad, N. , Alam, M.Z. ,
Kabashi, N.A.
(2014) *Journal of Material Cycles
and Waste Management*

[View all related documents based
on references](#)

[Find more related documents in
Scopus based on:](#)

[Authors >](#) [Keywords >](#)

- 9 Zheng, Z., Shetty, K.
Cranberry processing waste for solid state fungal inoculant production

(1998) *Process Biochemistry*, 33 (3), pp. 323-329. Cited 55 times.
doi: 10.1016/S0032-9592(97)87514-0

[View at Publisher](#)

- 10 Fang, M., Wong, J.W.C.
Effects of lime amendment on availability of heavy metals and maturation in sewage sludge composting

(1999) *Environmental Pollution*, 106 (1), pp. 83-89. Cited 152 times.
doi: 10.1016/S0269-7491(99)00056-1

[View at Publisher](#)

- 11 Zucconi, F., Pera, A., Forte, M., De Bertoldi, M.
Evaluating toxicity of immature compost

(1981) *BioCycle*, 22 (2), pp. 54-57. Cited 642 times.

- 12 Wong, J.W.C., Mak, K.F., Chan, N.W., Lam, A., Fang, M., Zhou, L.X., Wu, Q.T., (...), Liao, X.D.
Co-composting of soybean residues and leaves in Hong Kong


(2000) *Bioresource Technology*, 76 (2), pp. 99-106. Cited 127 times.
doi: 10.1016/S0960-8524(00)00103-6

[View at Publisher](#)

- 13 Wei, Y.-S., Fan, Y.-B., Wang, M.-J., Wang, J.-S.
Composting and compost application in China

(2000) *Resources, Conservation and Recycling*, 30 (4), pp. 277-300. Cited 61 times.
doi: 10.1016/S0921-3449(00)00066-5

[View at Publisher](#)

 Kabbashi, N.A.; IIUM, Malaysia, Jalan Gombak, KL, Malaysia

© Copyright 2015 Elsevier B.V., All rights reserved.

[< Back to results](#) | 1 of 1

[^ Top of page](#)

About Scopus

[What is Scopus](#)

[Content coverage](#)

[Scopus blog](#)

[Scopus API](#)

[Privacy matters](#)

Language

[日本語に切り替える](#)

[切换到简体中文](#)

[切换到繁體中文](#)

[Русский язык](#)

Customer Service

[Help](#)

[Contact us](#)

ELSEVIER

[Terms and conditions](#) [Privacy policy](#)

Copyright © 2018 Elsevier B.V. All rights reserved. Scopus® is a registered trademark of Elsevier B.V.

Cookies are set by this site. To decline them or learn more, visit our [Cookies page](#).

 RELX Group™