

عنوان مقاله:

Effects of Temperature, Aeration Rate and Reaction Time on Composting of Empty Fruit Bunches of Oil-Palm

محل انتشار:

فصلنامه انرژی و محیط زیست ایران، دوره 7، شماره 2 (سال: 1394)

تعداد صفحات اصل مقاله: 7

نویسندگان:

Vivienne Sim Jie Wei - Faculty of Engineering and Science, Curtin University Sarawak Campus, CDT ۲۵۰, ۹۸۰۰۹ Miri, Sarawak, Malaysia

Chua Han Ging - Faculty of Engineering and Science, Curtin University Sarawak Campus, CDT ۲۵۰, ۹۸۰۰۹ Miri, Sarawak, Malaysia

Agus Saptoroand - Faculty of Engineering and Science, Curtin University Sarawak Campus, CDT ۲۵۰, ۹۸۰۰۹ Miri, Sarawak, Malaysia

Jobrun Nandong - Faculty of Engineering and Science, Curtin University Sarawak Campus, CDT ۲۵۰, ۹۸۰۰۹ Miri, Sarawak, Malaysia

خلاصه مقاله:

Composting is a biochemical process in a controlled aerobic environment where thermophilic microorganisms stabilize organic waste substrates into valuable humus-like products. Three parameters which are known to affect the composting process including temperature, aeration rate and composting time. This research aims at developing a model to describe the relative influence of different temperatures, aeration rates and reaction time on the composting process and how it affects the final quality of EFB compost produced. EFB samples were mixed with urea as a source of nitrogen and fresh compost as inoculum. The composting process was carried out in a composting test bench for a total of 42 days. The moisture content was found to be significantly affected by temperature and reaction time. Carbon loss was significantly affected by all three factors. Nitrogen content was affected by aeration rate, reaction time as well as interaction between temperature and reaction time. Changes in total ions over time showed a positive correlation with the value of conductivity (Pearson correlation coefficient of 0.853) and the largest reduction in C/N ratio (from 30.2:1 to 17.6:1) was obtained at temperature of 40°C and aeration rate of 0.4 L/min kg. The results of this study could form a basis for palm oil mills to improve the quality of EFB composts produced within a short maturation period and with low C/N ratio.

کلمات کلیدی:

biodegradation, moisture content, pH, C/N ratio

لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/487738>



