

ABSTRAK

Sampah adalah bahan yang sudah tidak digunakan lagi oleh setiap individu dan dibuang. Kegiatan perguruan tinggi yang memiliki dosen, karyawan, dan mahasiswa menghasilkan sampah setiap hari. Jenis sampah yang dihasilkan dari kampus berupa sampah anorganik seperti plastik, botol dan kaleng serta sampah organik seperti sisa makanan dari kantin dan daun kering dari kebun. Daun kering adalah sampah yang paling banyak dihasilkan dibandingkan sampah lain. Salah satu metode yang efektif untuk menghindari potensi masalah yang disebabkan oleh timbunan sampah organik yaitu dengan proses pengomposan. Tujuan dari penelitian ini adalah menganalisis pengaruh kadar air dan ukuran bahan pada proses pengomposan dan menentukan kadar air optimum dan ukuran bahan optimum untuk kompos. Penelitian ini dilakukan pada skala laboratorium selama 30 hari dan proses pengomposan dilakukan dengan metode Takakura. Variasi kadar air yang digunakan dalam penelitian ini adalah 40%, 50%, dan 60%. Variasi ukuran bahan yang digunakan adalah 1 cm, 1,5 cm, 2 cm. Mol tetes tebu difermentasi sebelum digunakan sebagai aktivator kompos. Studi pendahuluan dilakukan untuk mengetahui karakteristik bahan baku kompos dan mol tetes tebu. Kadar air, suhu, dan pH diukur setiap hari. CNPK diuji di awal dan di akhir proses pengomposan. Uji toksisitas dilakukan untuk mengetahui bakteri patogen yang terkandung dalam kompos matang. Hasil penelitian menunjukkan bahwa kadar air optimum adalah 60% dan ukuran bahan optimum adalah 1 cm. Variasi optimum tersebut ditentukan dari skoring. Variasi tersebut memiliki rasio C/N sebesar 16,531%, kandungan C-organik 29,773%, kandungan N-Total 1,801%, kandungan P-Total 0,112% dan K-Total 2,536%, dan nilai GI 109,6%. Uji Total coli sebesar 24 MPN/gram menunjukkan bahwa dari penelitian ini kompos telah matang dan bebas dari bakteri pathogen.

Keywords: Kompos; *Activator*; Kadar Air; Sampah daun; Uji Toksisitas.

ABSTRACT

[The Effect of water content and material size on Organic Waste Composting at TPST Diponegoro University with Takakura Method]. Waste is material that is no longer used and disposed by any individual. College activities that involve lecturers, staffs, and college students produce waste every day. Types of waste products from college activities inorganic waste such as plastics, bottles, and cans and also organic waste such as leftover foods from canteen and dried leaves. Dried leaves are the most substantial waste compared to another type of waste. One effective method to avoid any potential problem caused by excessive amount of organic waste is composting. The aim of this study was to analyze the effect of moisture content and material size on composting process and to determine the optimum moisture content and material size for composting. This study was conducted on laboratory scale for 30 days and composting process was implemented using the *takakura* method. Various moisture contents used in this study were 40%, 50%, and 60%. The material size has variety from 1 cm, 1,5 cm, and 2 cm. Molasses is fermented before it is used as a compost activator. Preliminary study conducted to observe the characteristic of raw materials of the compost and the molasses. Moisture content, temperature, and pH were measured daily. CNPK had been tested in the beginning and in the end of composting process. Toxicity test was performed to measure pathogenic bacterias contained in mature compost. The results showed that the optimum moisture content was 60% and the optimum material size was 1 cm. The optimum variables are determined by scoring. The optimum variables has the value of C/N ratio which is 16,531% at K1-60, Total-N which is 1,801% at K1-60, Total-P which is 0,112% at K1-60, Total-K which is 2,536% at K1-60, and GI value which is 109,6% at K1-60. The value of total coli test showed 24 MPN/gram which pointed that the mature compost had been produced from this research and free from pathogenic bacteria.

Keywords: Compost; Activator; Water content; Dried leaves; Toxicity Test.