

PENGARUH PENGATURAN WAKTU DAN SUHU INKUBASI FASE TERMOFIL TERHADAP PEROMBAKAN PADA PENGOMPOSAN AMPAS TEBU

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ABSTRAK

Ampas tebu (*bagasse*) mempunyai kadar selulosa dan lignin yang tinggi yang secara intensif terdegradasi pada fase termofil. Secara alami, pengomposan ampas tebu memerlukan waktu lama, sehingga untuk meningkatkan proses degradasi diperlukan pengaturan pada waktu dan suhu inkubasi pada fase termofil. Penelitian ini bertujuan untuk mengetahui pengaruh lama waktu dan suhu inkubasi pada fase termofil terhadap degradasi bahan selama proses pengomposan ampas tebu menggunakan bioaktivator Orgadec. Penelitian disusun dalam rancangan acak lengkap (RAL) dua faktor ditambah satu kontrol. Faktor pertama berupa lama waktu inkubasi fase termofil, yaitu 1 minggu, 2 minggu, dan 3 minggu. Faktor kedua berupa suhu inkubasi pada fase termofil, yaitu suhu 55°C dan 60°C. Masing-masing perlakuan diulang sebanyak 3 kali. Parameter yang diamati yaitu warna kompos, pH, kadar C-organik, kadar N-total, rasio C/N, pembentukan humat, evolusi CO₂, dan kehilangan berat setelah pengomposan. Hasil penelitian menunjukkan bahwa pengaturan durasi (lama) inkubasi pada fase termofil berpengaruh terhadap kadar N-total dan rasio C/N hasil kompos. Suhu inkubasi pada fase termofil berpengaruh terhadap evolusi CO₂, kadar N-total dan rasio C/N hasil kompos. Tidak ada interaksi pada kombinasi perlakuan antara durasi dan suhu fase termofil pada semua parameter yang diamati. Pengomposan ampas tebu pada suhu 60°C (S2) selama 3 minggu periode inkubasi (W3) memberikan hasil terbaik.

Kata kunci: lama dan waktu inkubasi, fase termofil, ampas tebu, pengomposan

THE EFFECT OF SETTING THE INCUBATION DURATION AND TEMPERATURE OF THERMOPHILIC PHASE ON THE COMPOSTING PROCESS OF BAGASSE

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ABSTRACT

Sugarcane pulp (bagasse) has high levels of cellulose and lignin that are intensively degraded in the thermophilic phase. Naturally, composting sugarcane pulp takes a long time, so to improve the degradation process requires setting the duration (length) and temperature during incubation in the thermophilic phase. The study aimed to determine the effect of incubation duration and temperature in the thermophilic phase on the degradation of materials during the composting process using the bioactivator Orgadec. The research was organized into a complete randomized design (RAL) of two factors plus one control. The first factor in the form of incubation duration of thermophilic phase, which is 1 week, 2 weeks, and 3 weeks. The second factor is incubation temperature in the thermophilic phase, which is 55°C and 60°C. Each treatment is repeated three times. The observed parameters are compost color, pH, C-organic levels, N-total levels, C/N ratios, humat formation, CO₂ evolution, and weight loss after composting. The results showed that the duration incubation in the thermophilic phase affects the N-total level and the C/N ratio of compost results. The temperature of the thermophilic phase affects the evolution of CO₂, N-total levels and the C/N ratio of compost results. Incubation temperature in the thermophilic phase affects CO₂ evolution, N-total levels and compost-yielding C/N ratio. There was no interaction on the combination of treatments between the duration and temperature of the thermophilic phase on all observed parameters. Composting sugarcane pulp at 60°C (S2) for a 3-week incubation period (W3) gives the best results.

Keywords: incubation duration and temperature, thermophilic phase, bagasse, composting.