RINGKASAN

Pengomposan merupakan proses penguraian bahan organik dengan bantuan mikroorganisme yang menghasilkan bahan yang stabil menyerupai humus. Pengomposan kotoran sapi secara alami membutuhkan waktu yang cukup lama sehingga diperlukan inovasi yang dapat mempercepat proses pengomposan. Percepatan pengomposan tersebut dapat dilakukan dengan menggunakan bahan tambahan atau peningkatan aerasi pada tumpukan bahan organik. Bahan tambahan yang digunakan dalam penelitian ini adalah biochar tongkol jagung dan peningkatan aerasi kompos dengan melakukan kegiatan pengadukan. Berdasarkan penelitian terdahulu, penambahan biochar 10% dari bobot basah bahan utama dapat meningkatkan kualitas pengomposan. Penelitian ini bertujuan untuk mengetahui pengaruh penambahan biochar tongkol jagung 10% dan pengadukan seminggu sekali terhadap proses dan hasil pengomposan kotoran sapi.

Penelitian ini dilaksanakan di Desa Singasari, Kecamatan Karanglewas sebagai tempat pengomposan serta Laboratorium Tanah dan Sumberdaya Lahan untuk analisis kualitas kimia kompos. Metode penelitian yang digunakan yaitu Rancangan Acak Kelompok Lengkap (RAKL) 2 faktor. Faktor pertama adalah penambahan biochar tongkol jagung 10%, sedangkan faktor kedua adalah pengadukan seminggu sekali. Setiap faktor terdiri atas dua taraf, yaitu B0 = tanpa penambahan biochar tongkol jagung 10%; B1 = penambahan biochar tongkol jagung 10%; P0 = tanpa pengadukan; P1 = pengadukan seminggu sekali. Kedua faktor digabungkan sehingga terdapat 4 perlakuan. Setiap perlakuan diulang sebanyak 5 kali, sehingga didapatkan 20 unit percobaan. Hasil penelitian kemudian dianalisis dengan ANOVA pada taraf kepercayaan 95%, dan apabila berbeda nyata dilanjutkan dengan dengan uji *Least Significant Difference* (LSD) pada taraf kepercayaan 95%.

Hasil penelitian menunjukkan bahwa penambahan biochar tongkol jagung 10% dari bobot basah bahan utama mampu meningkatkan proses dan hasil pengomposan kotoran sapi. Pengomposan dengan tambahan biochar tongkol jagung 10% bobot basah bahan utama mampu meningkatkan proses dan hasil pengomposan yang ditandai dengan keniakan suhu pada minggu ke-2, pH pengomposan mendekati angka optimal, kadar air kompos yang lebih rendah, kadar N total yang lebih tinggi, kadar K_2O lebih tinggi dan kadar C-organik yang lebih tinggi. Perlakuan pengadukan kompos menghasilkan kelembaban yang lebih rendah. Interaksi antara perlakuan penambahan biochar tongkol jagung dengan pengadukan tidak mengoptimalkan proses dan hasil pengomposan dikarenakan volume minimum pengomposan tidak terpenuhi.

SUMMARY

Composting is a process of decomposing organik materials with the help of microorganisms, resulting in a stable substance similar to humus. Naturally, the composting of cow manure takes a considerable amount of time, making it necessary to introduce innovations that can accelerate the process. This acceleration can be achieved by adding supplementary materials or enhancing aeration in the organik material pile. In this study, the supplementary material used is corn cob biochar, while aeration improvement is achieved through periodic mixing. Previous research has shown that adding 10% biochar (based on the wet weight of the main material) can enhance the quality of composting. This study aims to determine the effects of adding 10% corn cob biochar and mixing once a week on the composting process and the final compost quality of cow manure.

The study was conducted in Singasari Village, Karanglewas District, as the composting site, and in the Soil and Land Resource Laboratory for chemical quality analysis of the compost. The research method used was a Randomized Complete Block Design (RCBD) with two factors. The first factor was the addition of 10% corn cob biochar, while the second factor was weekly mixing. Each factor had two levels: B0 = without 10% corn cob biochar, B1 = with 10% corn cob biochar, P0 = without mixing, and P1 = mixing once a week. The combination of these two factors resulted in four treatments, each repeated five times, leading to a total of 20 experimental units. The research results were analyzed using ANOVA at a 95% confidence level, and if significant differences were found, further analysis was conducted using the Least Significant Difference (LSD) test at a 95% confidence level.

The findings indicate that the addition of 10% corn cob biochar (based on the wet weight of the main material) significantly improved the composting process and the final compost quality of cow manure. Composting with 10% biochar addition enhanced the process and outcome, compost pH approaching the optimal range, lower compost moisture content, higher total nitrogen (N) levels, and potassium oxide (K_2O) levels, and a higher organik carbon (C-organik) content. The mixing treatment resulted in lower moisture levels. However, the interaction between biochar addition and mixing did not optimize the composting process and final compost quality, as the minimum composting volume requirement was not met.

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