ABSTRACT

THE EFFECT OF MIXING TIME AND KCL ENRICHMENT ON CHARACTERISTICS OF PELLETIZED COMPOST FERTILIZER

BY

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Pellets are the result of modifications to the mesh resulting from the pressing process, so that the pellets change shape to become hard. The pellet compost in this study was derived from organic crumb fertilizer as a result of the empty bunches experiment which was used as a medium for mushroom growth. This study aims to analyze the variation of pulverization time on the addition of the best Potassium fertilizer on the characteristics of the OPEFB pellet fertilizer used for the edible mushroom growing medium and to analyze the effect of a mixture of Potassium organic fertilizer on the characteristics of the OPEFB pellet organic fertilizer produced by the edible mushroom growing medium.

This research was conducted from December 2021 to June 2022. The composting was carried out at the University of Lampung's Integrated Waste Disposal Site (TPST). The pellets were made at the Agricultural Machinery and Equipment Power Laboratory (DAMP) Department of Agricultural Engineering, Faculty of Agriculture, University of Lampung. Meanwhile, pellet testing was carried out at the Water and Land Resources Engineering Laboratory (RSDAL) Department of

Agricultural Engineering, Faculty of Agriculture, University of Lampung. The Potassium Level Test was carried out at the Technical Implementation Unit of the Integrated Laboratory and the Center for Technological Innovation (UPT LTSIT) University of Lampung.

This study used a completely randomized design (CRD) with 2 factors, namely, the addition of K with 4 levels of K0 (without K fertilizer), K1 (3% K fertilizer), K2 (6% K fertilizer), and K3 (9% K fertilizer). And the pulverizing time factor with 3 repetitions of time is 10 minutes, 20 minutes, and 30 minutes. Each treatment was repeated 3 times so that 36 experimental samples were obtained. The parameters observed were pellet water content, pellet density, pellet absorption capacity to air, pellet resistance to pressure, pellet strength to vibration, pellet resistance to hardiness test, solubility of pellet fertilizer, and measuring the degree of acidity (pH) in pellet fertilizer.

The results of this study indicate that there is a real and non-significant effect on the parameters used. The addition of K fertilizer showed a significant effect on pellet water content, particle density, bulk density, and hygroscopicity. Meanwhile, the addition of K fertilizer showed no significant effect on compressive strength, solubility (disintegration time), vibration resistance, hardiness, and pH test, said to have a significant effect if the probability value was less than 0.05 and had no significant effect if the probability value was more than 0.05.

Keywords : pellets, potash fertilizer, pulverizing time, TKKS pellets

ABSTRAK

PENGARUH LAMA PELUMATAN DAN PENAMBAHAN KCL TERHADAP KARAKTERISTIK PUPUK KOMPOS PELET

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Pelet merupakan hasil dari modifikasi pada mesh yang dihasilkan dari proses pengepresan, sehingga pelet berubah wujud menjadi keras. Pupuk kompos pelet pada penelitian ini berasal dari pupuk remah organik hasil dari percobaan tandan kosong yang digunakan sebagai tempat pertumbuhan media jamur merang. Penelitian ini bertujuan untuk menganalisis variasi lama pelumatan pada penambahan pupuk Kalium yang terbaik pada karakteristik pupuk pelet TKKS bekas media tanam jamur merang yang di hasilkan dan menganalisis pengaruh campuran pupuk organik Kalium terhadap karakteristik pupuk organik pelet TKKS bekas media tanam jamur merang yang di hasilkan.

Penelitian ini dilakukan pada bulan Desember 2021 sampai Juni 2022. Pembuatan kompos dilakukan di Tempat Pembuangan Sampah Terpadu (TPST) Universitas Lampung. Pembuatan pelet dilakukan di Laboratorium Daya Alat dan Mesin Pertanian (DAMP) Jurusan Teknik Pertanian Fakultas Pertanian Universitas Lampung. Sedangkan pengujian pelet dilakukan di Laboraturium Rekayasa Sumberdaya Air dan Lahan (RSDAL) Jurusan Teknik Pertanian, Fakultas

Pertanian Universitas Lampung. Pengujian Kadar Kalium dilakukan di Unit Pelaksana Teknis Laboratorium Terpadu dan Sentra Inovasi Teknologi (UPT LTSIT) Universitas Lampung.

Penelitian ini menggunakan rancangan acak lengkap (RAL) dengan 2 faktor yaitu, faktor penambahan K dengan 4 taraf K0 (tanpa pupuk K), K1 (3% pupuk K), K2 (6% pupuk K), dan K3 (9% pupuk K). Dan faktor lama pelumatan dengan 3 ulangan waktu yaitu lama pelumatan 10 menit, 20 menit, dan 30 menit. Setiap perlakuan dilakukan 3 kali ulangan sehingga diperoleh 36 sampel percobaan. Parameter yang diamati yaitu kadar air, masa jenis pelet, daya serap pelet terhadap udara, daya tahan pelet terhadap tekanan , kekuatan pelet terhadap getaran, ketahanan pelet terhadap uji banting, kelarutan pupuk pelet, dan mengukur drajat keasaman (pH) pada pupuk pelet.

Hasil penelitian ini menunjukkan adanya pengaruh nyata dan tidak nyata terhadap parameter yang digunakan. Perlakuan penambahan pupuk K menunjukan pengaruh nyata terhadap kadar air, massa jenis partikel, massa jenis curah, dan higrokopisitas. Sedangkan, penambahan pupuk K menunjukan tidak berpengaruh nyata terhadap kuat tekan, kelarutan *(desintegration time)*, ketahanan getar, ketahanan banting, dan uji pH, dikatakan berpengaruh nyata apabila nilai probability kurang dari 0,05 dan tidak berpengaruh nyata apabila nilai probability lebih dari 0,05.

Kata kunci : lama pelumatan, pelet, pelet TKKS, pupuk kalium.