ABSTRACT

CHARACTERISTICS OF PELLET COMPOST FERTILIZER ENRICHED WITH RICE HUSK CHARCOAL AND NPK FERTILIZER

BY

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Organic fertilizers can be made in various forms, including in bulk, tablet, pellet, or granular form. Making pellets from organic fertilizers is another way to facilitate the use of compost fertilizer. Pellet compost fertilizer makes it easy in handling, packaging, storage, and transportation. Combining rice husk charcoal, compost, and NPK fertilizer in the form of pellet fertilizer is expected to improve the physical properties of the soil and can reduce the use of inorganic fertilizers while maintaining crop productivity. This study aims to determine the effect of rice husk charcoal mixture and NPK fertilizer added to the characteristics of pellet fertilizer produced.

This research was conducted in January 2022-April 2022 at the Laboratory of agricultural equipment and machinery power (DAMP) and Laboratory of water and Land Resources Engineering (RSDAL), Department of Agricultural Engineering, Faculty of Agriculture, University of Lampung. In this study, the complete random design (RAL) (in the factorial arrangement) consists of 2 factors, namely rice husk charcoal factor consists of 3 levels (0%, 11,5%, 23%) and NPK fertilizer factor consists of 3 levels (0%, 4%, 8%). Each treatment was done 3 times so that 27 experimental units were obtained. The parameters observed in this study are pH test, particle density, bulk density, vibration strength, banting strength, solubility, hygroscopicity, compressive strength and NPK content of pellet compost fertilizer.

The results showed that the treatment of rice husk charcoal had a significant effect on the level of acrylic=0.05 on the test results of particle density, bulk density, vibration strength, banting strength, solubility, hygroscopicity, compressive strength and NPK levels. The addition of NPK fertilizer had a significant effect on

the level of 0.05 on the results of pH testing, particle density, bulk density, vibration resistance, solubility, hygroscopicity, compressive strength and the percentage of NPK nutrients. The effect of the interaction of rice husk charcoal and the addition of NPK fertilizer had a significant effect on the level of UTC=0.05 on the test results of particle density, bulk density, vibration strength, Slam resistance, solubility, compressive strength, and NPK levels. Based on the physical strength of pellet compost fertilizer, the treatment that has the best physical strength value is found in A1N1 treatment (without rice husk charcoal and NPK fertilizer). Based on the solubility time of pellet compost fertilizer, the treatment that has the best solubility time is found in A3N3 treatment (23% rice husk charcoal and 8% NPK fertilizer) which is about 32.67 hours. Based on the NPK content of pellet compost fertilizer, the treatment that has the best NPK content is found in A1N3 treatment (0% rice husk charcoal and 8% NPK fertilizer) which is 4.25%.

Keywords: pellet compost fertilizer, rice husk charcoal, NPK fertilizer.

ABSTRAK

KARAKTERISTIK PUPUK KOMPOS PELET YANG DIPERKAYA DENGAN ARANG SEKAM PADI DAN PUPUK NPK

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Pupuk organik dapat dibuat dalam bermacam macam bentuk antara lain dalam bentuk curah, tablet, pelet, atau granular. Pembuatan pelet dari pupuk organik adalah cara lain untuk memudahkan penggunaan pupuk kompos. Pupuk kompos pelet memudahkan dalam penanganan, pengemasan, penyimpanan, dan transportasi. Mengkombinasikan arang sekam padi, kompos, dan pupuk NPK yaitu dalam bentuk pupuk pelet diharapkan dapat memperbaiki sifat fisik tanah dan dapat mengurangi penggunaan pupuk anorganik dengan tetap mempertahankan produktivitas tanaman. Penelitian ini bertujuan untuk mengetahui pengaruh campuran arang sekam padi dan pupuk NPK yang ditambahkan terhadap karakteristik pupuk pelet yang dihasilkan.

Penelitian ini dilaksanakan pada bulan Januari 2022 - April 2022 di Laboratorium Daya Alat dan Mesin Pertanian (DAMP) dan Laboratorium Rekayasa Sumberdaya Air dan Lahan (RSDAL), Jurusan Teknik Pertanian, Fakultas Pertanian, Universitas Lampung. Pada penelitian ini, Rancangan Acak Lengkap (RAL) (dalam susunan faktorial) terdiri dari 2 faktor yaitu faktor arang sekam padi terdiri dari 3 taraf (0%, 11,5%, 23%) dan faktor pupuk NPK terdiri dari 3 taraf (0%, 4%, 8%). Setiap perlakuan dilakukan 3 kali ulangan sehingga diperoleh 27 unit percobaan. Parameter yang diamati pada penelitian ini yaitu uji pH, massa jenis partikel, massa jenis curah, kekuatan getar, kekuatan banting, kelarutan, higroskopisitas, daya tekan dan kadar NPK pupuk kompos pelet.

Hasil penelitian menunjukkan perlakuan arang sekam padi berpengaruh nyata pada taraf α=0,05 terhadap hasil pengujian massa jenis partikel, massa jenis curah, kekuatan getar, kekuatan banting, kelarutan, higroskopisitas, daya tekan dan kadar NPK. Penambahan pupuk NPK berpengaruh nyata pada taraf α=0,05

terhadap hasil pengujian pH, massa jenis partikel, massa jenis curah, ketahanan getar, kelarutan, higroskopisitas, daya tekan dan persentase unsur hara NPK. Pengaruh interaksi arang sekam padi dan penambahan pupuk NPK berpengaruh nyata pada taraf α=0,05 terhadap hasil pengujian massa jenis partikel, massa jenis curah, kekuatan getar, ketahanan banting, kelarutan, daya tekan, dan kadar NPK. Berdasarkan kekuatan fisik pupuk kompos pelet, perlakuan yang memiliki nilai kekuatan fisik terbaik terdapat pada perlakuan A1N1 (tanpa arang sekam padi dan pupuk NPK). Berdasarkan waktu kelarutan pupuk kompos pelet, perlakuan yang memiliki waktu kelarutan terbaik terdapat pada perlakuan A3N3 (23% arang sekam padi dan 8% pupuk NPK) yaitu sekitar 32,67 jam. Berdasarkan kadar NPK pupuk kompos pelet, perlakuan yang memiliki kadar NPK terbaik terdapat pada perlakuan A1N3 (0% arang sekam padi dan 8% pupuk NPK) yaitu 4,25%.

Kata kunci : Pupuk kompos pelet, arang sekam padi, pupuk NPK.