RINGKASAN

ZULFIKAR ASLAM. Pengaruh Waktu Fermentasi Terhadap Kandungan Unsur Hara Makro Pupuk Padat rumput laut (Sargassum Polycystum) dan Ampas Kelapa. Dibimbing oleh SRI NOVALINA dan AIDIL FADLI ILHAMDY.

Rumput laut coklat *Sargassum polycystum* memiliki potensi besar sebagai sumber hara organik karena kaya akan mineral mikro dan zat pengatur tumbuh. Diversifikasi pemanfaatan limbah dilakukan dengan mengintegrasikan rumput laut coklat dan ampas kelapa untuk diolah menjadi produk pupuk organik padat bermutu tinggi yang ramah lingkungan. Tujuan dari penelitian melihat pengaruh durasi waktu fermentasi guna menentukan standar formulasi pupuk organik padat yang memenuhi mutu SNI. Metode penelitian dianalisis secara *Kruskal-Wallis* dengan perlakuan durasi fermentasi selama 10 hari (F1), 20 hari (F2), dan 30 hari (F3) menggunakan bioaktivator EM4 yang diaktifkan bersama molase. Hasil penelitian menunjukkan formulasi terbaik dicapai pada perlakuan F3 (fermentasi 30 hari). Nilai pH meningkat dari 5,75 menjadi 6,24, suhu akhir mencapai 29,4°C, dan persentase susut bobot tertinggi sebesar 57,2%. Pengujian laboratorium terhadap unsur makro menghasilkan kadar nitrogen total sebesar 1,11% (stabil sejak hari ke-20) kandungan fosfor 0,12% serta kadar kalium sebesar 0,74% setelah sempat berfluktuasi. Tidak ditemukannya pengaruh nyata secara statistik akibat waktu pengomposan terhadap kandungan unsur hara makro (NPK). Analisis data menunjukkan bahwa lama fermentasi berpengaruh nyata pada pH, suhu, namun tidak pada kandungan unsur hara makronya (NPK).

Kata Kunci : Ampas Kelapa, Fermentasi, Pupuk Padat, *Sargassum polycystum*

SUMMARY

ZULFIKAR ASLAM. The Effect of Fermentation Time on the Macro Nutrient Content of Solid Fertilizer Based on Seaweed (*Sargassum polycystum*) and Coconut Dregs. Supervised by SRI NOVALINA and AIDIL FADLI ILHAMDY

The brown seaweed *Sargassum polycystum* has great potential as an organic nutrient source due to its richness in micronutrients and plant growth regulators. Waste utilization diversification was conducted by integrating brown seaweed and coconut dregs to be processed into high-quality, eco-friendly solid organic fertilizer products. The purpose of this study was to examine the effect of fermentation duration to determine the formulation standard of solid organic fertilizer that meets SNI quality standards. The research method was analyzed using the Kruskal-Wallis test, with fermentation duration treatments of 10 days (F1), 20 days (F2), and 30 days (F3) using the EM4 bioactivator activated with molasses. The results showed that the best formulation was achieved in the F3 treatment (30-day fermentation). The pH value increased from 5.75 to 6.24, the final temperature reached 29.4°C, and the highest weight loss percentage was 57.2%. Laboratory testing on macro nutrients yielded a total nitrogen content of 1.11% (stable since day 20) phosphorus content of 0.12% and potassium level of 0.74% after fluctuating. No statistically significant effect was found due to composting time on the macro-nutrient (NPK) content. Data analysis shows that fermentation duration has a significant effect on pH and temperature, but not on its macro-nutrient (NPK) content.

Keywords : *Sargassum polycystum*, Coconut Dregs, Fermentation, Solid Fertilizer