

**ANALISIS KADAR MAGNESIUM (Mg) TOTAL DAN MANGAN (Mn)  
PADA PENAMBAHAN EM4 TERHADAP PUPUK KOMPOS  
(SAMPAH KULIT KEDELAI-KACANG PANJANG)**

**ANALYSIS OF TOTAL MAGNESIUM (MG) AND MANGANESE LEVELS  
IN ADDITION OF EM4 TO COMPOST FERTILIZER  
(SOYBEAN SKIN WASTE-LONG BEAN)**

**Darius Ryan Partogi Simamora<sup>\*</sup>, Saibun Sitorus, Daniel Tarigan**

Program Studi Kimia, Fakultas Matematika dan Ilmu Pengetahuan Alam, Universitas Mulawarman,  
Jalan Barong Tongkok No.4 Kampus Gunung Kelua, Samarinda, Indonesia

<sup>\*</sup>Corresponding Author, email: dariussimamora1907@gmail.com

**ABSTRACT**

This study on composting time analysis and determining the optimum time based on pH conditions, temperature and humidity of soybean peel and string bean compost and determining the optimum variation of EM4 bioactivators to total magnesium (Mg) and manganese (Mn) levels has been carried out. The study consisted of making compost in takakura baskets, measuring the pH, temperature and humidity of the compost and analyzing total magnesium (Mg) and manganese (Mn) levels using an atomic absorption spectrophotometer. The results of measuring the pH, temperature and humidity of the compost were tested using a one-way analysis of variance test. The results showed that the F value of calculating the pH, temperature and humidity of the compost was greater than the table F value with successive values of  $146.427 > 2.62$ ;  $10,690 > 2.62$ ;  $746.343 > 2.62$  so it was concluded that the composting time had a significant effect on the pH, temperature and humidity of the compost. The optimum time of composting is 16 days with a pH of 7.19-7.5, a temperature of 27-28.9°C and a humidity of 50-60%. The optimum variation of EM4 is 5 mL with a total magnesium (Mg) content value of 0.09644% and manganese (Mn) total of 0.01788%.

**Keywords:** Compost, Soybean Skin, Long Bean, Bioactivator EM4.

**ABSTRAK**

Penelitian ini mengenai analisis waktu pengomposan dan menentukan waktu optimum berdasarkan kondisi pH, suhu dan kelembaban kompos sampah kulit kedelai dan kacang panjang serta menentukan variasi optimum bioaktivator EM4 terhadap kadar magnesium (Mg) total dan mangan (Mn) telah dilakukan. Penelitian terdiri dari pembuatan pupuk kompos di dalam keranjang takakura, mengukur pH, suhu dan kelembaban kompos serta menganalisis kadar magnesium (Mg) total dan mangan (Mn) menggunakan spektrofotometer serapan atom. Hasil pengukuran pH, suhu dan kelembaban kompos di uji menggunakan uji *one way analysis of variance*. Hasil penelitian menunjukkan bahwa nilai F hitung pH, suhu dan kelembaban kompos lebih besar dibandingkan nilai F tabel dengan nilai berturut-turut  $146,427 > 2,62$ ;  $10,690 > 2,62$ ;  $746,343 > 2,62$  sehingga disimpulkan bahwa waktu pengomposan berpengaruh signifikan terhadap pH, suhu dan kelembaban kompos. Waktu optimum pengomposan adalah 16 hari dengan pH berkisar antara 7,19-7,5, suhu sebesar 27-28,9°C dan kelembaban sebesar 50-60%. Variasi optimum EM4 adalah 5 mL dengan nilai kadar magnesium (Mg) total sebesar 0,09644% dan mangan (Mn) total sebesar 0,01788%.

**Kata Kunci:** Kompos, Kulit Kedelai, Kacang Panjang, Bioaktivator EM4.