

ABSTRAK

RANCANG BANGUN PEMANTAUAN PROSES DEKOMPOSISI PUPUK KOMPOS BERBASIS *LOW-COST* & *MULTI POINT BOARD*

Oleh

REKSA SUHUD TRI ATMOJO

Permasalahan sampah organik yang biasanya berada dilingkungan sekitar jika termanfaatkan & diolah dapat dijadikan produk kompos. Contoh masalah lingkungan yang menjadi studi kasus ialah sampah daun, setidaknya untuk area Gedung H Fakultas Teknik Universitas Lampung dapat terkumpul tumpukkan sampah daun sekitar ± 500 gram. Diharapkan apabila sistem ini dibangun, dapat melakukan pemantauan pada suhu, kadar air, dan kelembapan proses dekomposisi kompos melalui koneksi internet berbasis *cloud platform* Thinger.io dan *Board NodeMCU V1.0* dimana harga *board* ini relatif terbilang murah (*low-cost*) & *Board NodeMCU* yang akan digunakan lebih dari satu (*multi-point*) sehingga kedepannya diharapkan dapat membantu para produsen kompos menjaga kualitas suhu dan kelembapan beserta kelengasan pada kompos yang sedang terdekomposisi melalui metode anaerob ke tingkat kisaran intensitas ideal agar mikroba bisa melakukan aktivitas secara maksimal pada proses dekomposisi kompos. Berdasarkan hasil penelitian, sistem yang telah dibangun berhasil memantau sesuai tujuan penelitian, yaitu pemantauan terhadap suhu dan kelembapan udara kompos pada kotak *composter* serta kelengasan pada waktu dekomposisi hingga kematangan kompos dapat memenuhi standar SNI 19-7030-2004 (dalam skripsi ini dekomposisi telah dilakukan selama 14 hari). Populasi mikroba > 7 hari meningkat drastis, peningkatan mikroba ini mengakibatkan kadar kelengasan turun drastis pada hari kesembilan sekitar pukul 12 siang hari dan hari ke-12 pukul 6 pagi hari menjadi < 30%, hal ini yang menyebabkan dibutuhkan perhatian lebih terhadap kelengasan apabila masa dekomposisi kompos memasuki tahap > 7 hari.

Kata kunci : Dekomposisi, Pupuk Kompos, *Low-cost*, *NodeMCU*, *Thinger.io*

ABSTRACT

DESIGN OF COMPOST FERTILIZER DECOMPOSITION PROCESS MONITORING BASED ON LOW-COST & MULTI POINT BOARD

By

REKSA SUHUD TRI ATMOJO

The problem of organic waste that is usually located in the surrounding environment if it is utilized & processed can be used as compost products. An example of an environmental problem which is a case study is leaf waste, at least for the area of Building H, Faculty of Engineering, University of Lampung, it can accumulate a pile of leaves around ± 500 grams. It is expected that when this system is built, it can monitor temperature, moisture content, and humidity of the compost decomposition process through the cloud-based internet connection platform Thingier.io and NodeMCU V1.0 Board, where the board price is relatively low & the NodeMCU Board will be used more than one (multi point) so that in the future it is expected to help compost producers maintain the quality of temperature and humidity and the moisture in compost which is decomposed through anaerobic method to the ideal intensity level so that microbes can carry out maximum activity in the compost decomposition process. Based on the results of the study, the system that was built successfully monitored it according to the research objectives, namely monitoring the temperature and humidity of compost air in composter boxes and moisture at the time of decomposition until compost maturity can meet SNI 19-7030-2004 standards (in this study decomposition has been carried out during 14 days). The microbial population $>7^{\text{th}}$ day increased dramatically, this increase in microbes resulted in a drastic drop in the moisture content on 9^{th} day at around 12 P.M. and the 12^{th} day at 6 A.M. to $<30\%$, which caused more attention to moisture when the decomposition period compost enters stage $>7^{\text{th}}$ day.

Keywords: Decomposition, Compost Fertilizer, Low-cost, NodeMCU, Thingier.io