

ABSTRAK

ISOLASI DAN KARAKTERISASI FUNGI TERMOFILIK TUMPUKAN KOMPOS PADA FASE PRE-DEKOMPOSISI *COMPOST PLANT* PT. GREAT GIANT PINEAPPLE

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Kompos merupakan produk hasil fermentasi bahan organik yang berasal dari daun tanaman, sayuran, buah-buahan, limbah organik, dan kotoran ternak. Pengomposan adalah suatu proses dekomposisi yang dilakukan oleh mikroorganisme dekomposer. Fungi termofilik berperan penting dalam proses dekomposisi bahan organik pada suhu tinggi, sehingga sangat penting untuk mempelajari keberagaman dan karakteristiknya dalam pengelolaan limbah organik. Penelitian ini bertujuan untuk mengisolasi dan mengkarakterisasi fungi termofilik yang terdapat pada kedalaman fase pre-dekomposisi di *Compost Plant* PT. GGP. Penelitian ini menggunakan metode deskriptif eksploratif dengan tahapan pengambilan sampel, homogenisasi dan pengenceran bertingkat, isolasi, pemurnian, karakterisasi makroskopis, mikroskopis, fisiologis dan penentuan indeks enzimatik. Hasil penelitian ini diperoleh 6 isolat fungi termofilik yang mampu menghasilkan enzim selulase pada isolat BIO-PK 1, BIO-PK 2, dan BIO-PK 5; enzim protease BIO-PK 1 dan BIO-PK 2; enzim ligninase BIO-PK 4. Hasil pengujian enzim diperoleh 3 fungi positif selulase, 2 fungi positif protease dan 1 fungi positif ligninase. Hasil Indeks Enzimatik tertinggi setiap enzim yaitu; selulase 3,73 (BIO-PK 2), protease 0,77 (BIO-PK 5), dan skoring ligninase sebesar 1 (BIO-PK 4). Hasil isolasi dan karakterisasi yang diperoleh kemudian akan dianalisis dan diuraikan secara deskriptif, kuantitatif, dan kualitatif.

Kata Kunci: Fungi Termofilik, Kompos, Pengomposan, Aktivitas Fisiologis.

ABSTRACT

ISOLATION AND CHARACTERIZATION OF THERMOPHILIC FUNGI IN COMPOST HEAPS DURING THE PRE-DECOMPOSITION PHASE AT THE COMPOST PLANT OF PT. GREAT GIANT PINEAPPLE

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Compost is a product of the fermentation of organic materials derived from plant leaves, vegetables, fruits, organic waste, and animal and livestock manure. Composting is a decomposition process carried out by decomposer microorganisms. Thermophilic fungi play a crucial role in the decomposition of organic materials at high temperatures, making it essential to study their diversity and characteristics in organic waste management. This study aims to isolate and characterize thermophilic fungi present in the pre-decomposition phase at the Compost Plant of PT. GGP. The study employs an exploratory descriptive method, including sample collection, homogenization and serial dilution, isolation, purification, macroscopic, microscopic, and physiological characterization, as well as enzymatic index determination. The results of this study yielded six thermophilic fungal isolates capable of producing cellulase enzymes in isolates BIO-PK 1, BIO-PK 2, and BIO-PK 5; protease enzymes in BIO-PK 1 and BIO-PK 2; and ligninase enzymes in BIO-PK 4. Enzyme testing results showed 3 fungi positive for cellulase, 2 fungi positive for protease, and 1 fungus positive for ligninase. The highest enzymatic index for each enzyme was: cellulase 3.73 (BIO-PK 2), protease 0.77 (BIO-PK 5), and ligninase scoring 1 (BIO-PK 4). The isolation and characterization results obtained will then be analyzed and described descriptively, quantitatively, and qualitatively.

Keywords: Thermophilic Fungi, Compost, Composting, Physiological Activity.