

**ANALISIS LAJU DEKOMPOSISI TEH HITAM
MENGUNAKAN METODA TBI (*Tea Bag Index*) PADA
TANAH VULKANIS G. TALAMAU-PASAMAN, SUMBAR**

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Abstrak

Bahan organik merupakan salah satu komponen penting penyusun tanah yang berperan besar dalam menentukan kesuburan fisik, kimia, dan biologi tanah. Laju dekomposisi bahan organik dipengaruhi oleh berbagai faktor, antara lain ukuran dan jenis partikel bahan organik, jumlah mikroorganisme, suhu dan pH tanah. Penelitian ini bertujuan untuk menganalisis laju dekomposisi teh hitam di tanah vulkanik kawasan Gunung Talamau, Kabupaten Pasaman Barat, Provinsi Sumatera Barat. Metode yang digunakan adalah Tea Bag Index (TBI), yang dilaksanakan pada 30 November 2022 hingga 25 April 2023. Pengambilan sampel dilakukan di empat kecamatan, yaitu Kecamatan Pasaman, Talamau, Luhak Nan Duo, dan Kinali. penelitian ini menggunakan teh hitam yang diambil pada interval hari ke 5, 10, 15, dan 20 dengan 3 ulangan, dari 45 lokasi sampel dengan total keseluruhan 540 sampel. Kantong teh ditanam pada kedalaman 10 cm dari permukaan tanah dan terletak pada ketinggian antara 50 hingga 900 meter di atas permukaan laut (mdpl), di lahan sawah, perkebunan kelapa sawit, dan hutan. Berdasarkan hasil penelitian, laju dekomposisi teh hitam menggunakan metode TBI (Tea Bag Index) selama 20 hari berada di kisaran 1,8–1,9% per hari dengan total dekomposisi sebesar 36–38%. Laju dekomposisi tercepat terjadi di lahan perkebunan kelapa sawit (2,93–1,89%/hari), diikuti oleh hutan (2,88–1,84%/hari), dan sawah (2,72–1,83%/hari), dekomposisi teh hitam habis pada Perkebunan sawit pada hari ke 51, hutan hari ke 52 dan sawah pada hari ke 53. Respirasi tanah berkisar antara 77,8–86,1 mg CO₂/g tanah/hari, berat volume 0,64–0,686 Mg/m³, pH tanah 5,73–6,09, konduktivitas Listrik (EC) 228–286 µS/cm, dan total padatan terlarut (TDS) 113–142 ppm. Kandungan C-organik berkisar antara 9,14–11,06%, C-labil 0,67–1,06%, dan nitrogen total 0,53–0,86%. Spektrum FTIR menunjukkan keberadaan gugus fungsi alkena (C=C), alkana (C-H), dan hidroksil (O-H) yang mengindikasikan adanya senyawa flavonoid seperti katekin, dengan pita serapan pada rentang 3270–3280.

Kata kunci : Bahan Organik, Gunung Talamau, Laju dekomposisi, Penggunaan lahan, Teh hitam.

ANALYSIS BLACK TEA DECOMPOSITION RATE BY USING TBI (*Tea Bag Index*) METHOD ON VOLCANIC SOIL OF MT. TALAMAU- PASAMAN, WEST SUMATERA

Abstrack

Organic matter is one of the components that make up the soil that plays an important role in soil physical, chemical and biological fertility. The main factors affect the rate of decomposition of organic matter are the size and type of organic matter particles, the number of microorganism, temperature and soil pH. The are of study to is analyze the decomposition rate of black tea located in volcanic soils at Mount Talamau area, West Pasaman Regency. This study used the Tea Bag Index (TBI) method, carried out from November 30, 2022 to April 25, 2023. The research experiments were carried out in Pasaman District, Talamau District, Luhak Nan Duo District and Kinali District. This study used of tea bag filled with black tea and collected at intervals of 5, 10, 15 and 20 days with 3 replicates, 45 sample locations with a total number of 540 samples. Tea bags were planted at a depth of 10 cm from the soil surface level and located at elevation at 50 to 900 meters above sea level (m.a.s.l), in rice fields, oil palm plantations and forests. Based on research results, the decomposition rate of black tea using the TBI (Tea bag Index) method for 20 days was between 1.8-1.9%/day with a total of 36-38%. The fastest decomposition rate of black tea is oil palm 2.93-1.89%, forest 2.88-1.84%, rice fields 2.72-1.83%. The decomposed fraction of black tea will last for palm oil 51 days, 52 days in the forest, and 53 days in the rice fields. The soil respiration ranged from 77.8-86.1 mgCO₂/gsoil/day. The bulk density of ranged from 0.64-0.686 Mg/m³. During the 20-day decomposition process, the soil pH value ranged from 5.73-6.09. The EC and TDS values of the soil ranged from 228-286 µS/cm and 113-142 ppm. The C-organic content ranged from 9.14-11.06%, the C-labile content ranged from 0.67-1.06% and the total soil N-0.53-0.86%. It was found that there were functional groups of alkenes (C=C), alkanes (C-H) and hydroxyl (O-H) which generally contained flavonoid compounds (catechins) in the absorption band 3270-3280.

Keywords: Organic Materials, Mount Talamau. Decomposition rate, Land use, black tea.