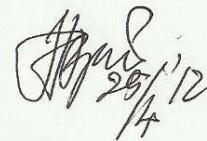




**EMISI GAS KARBON DIOKSIDA (CO₂) OLEH ORGANISME TANAH
PADA TANAH TERISOLIR DI HUTAN RAKYAT
DESA NGLANGGERAN KULON, PATUK, GUNUNG KIDUL,
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INTISARI

Organisme tanah melakukan kegiatan respirasi tanah yang menghasilkan gas CO₂. Penelitian ini bertujuan untuk mengetahui nilai emisi CO₂ dari kegiatan respirasi organisme tanah dan hubungannya dengan beberapa parameter lingkungan antara lain suhu tanah dan kadar lengas tanah. Hasil penelitian ini bermanfaat untuk memberi pengetahuan dan informasi baru terkait emisi CO₂ yang dihasilkan oleh organisme tanah.

Laju emisi CO₂ yang dihasilkan dari respirasi organisme tanah diukur dengan menggunakan metode *closed dynamic chamber* (CDC). Penelitian ini dilakukan di 3 plot hutan rakyat Desa Nglanggeran Kulon yang didominasi oleh tanaman Mahoni dengan model agroforestri pola tanam campur. Masing-masing plot seluas 31,5 m x 31,5 m dan diukur dengan menggunakan tabung respirasi (ukuran diameter 16,5 cm) yang dibenamkan pada tanah terisolir. Pengambilan data penelitian dilakukan selama 10 hari berturut-turut pada bulan Mei 2010, yaitu dari tanggal 9-18 Mei 2010.

Hasil penelitian ini menunjukkan bahwa nilai emisi CO₂ pada tanah terisolir di hutan rakyat Nglanggeran sebesar 0,47-103,217 g CO₂/m²/jam yang diperoleh pada kisaran suhu tanah 24,9°C-26°C dan kadar lengas tanah 26,06-37,13%. Fluktuasi emisi CO₂ (102,747 g CO₂/m²/jam) disebabkan karena terhambatnya gas CO₂ keluar dari tanah karena adanya genangan air sehingga menghasilkan emisi yang rendah (0,47 g CO₂/m²/jam). Sementara, emisi yang tinggi (103,217 g CO₂/m²/jam) terjadi karena kelimpahan organisme tanah, khususnya makro organisme (cacing dan semut), yang tidak merata dalam tanah terisolir.

Kata kunci : Emisi CO₂, tanah terisolir, *closed dynamic chamber*, organisme tanah



**CARBON DIOXIDE (CO₂) EMISSION BY SOIL ORGANISM OF
ISOLATED SOIL TRENCH ON COMMUNITY FOREST AT
NGLANGGERAN KULON, PATUK, GUNUNG KIDUL,
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ABSTRACT

Soil organism performed soil respiration that produces CO₂. This study aims to determine the value of CO₂ emissions from soil organism respiration activity and its relation to several environmental parameter such as soil temperature and soil moisture levels. The results of this study will be useful to provide new knowledge and information related CO₂ emissions produced by soil organism.

The rate of CO₂ emission produced by soil organism was measured using closed dynamic chamber (CDC) method. This study was done at Nglanggeran Kulon community forest using 3 plots which was dominated by Mahogany which was planted using random mixer agroforestry model. Plot sized 31,5 x 31,5 m were measured using a chamber (diameter sized 16,5 cm) which was planted on a trenching. This study was done from 9 – 18 May 2010.

This result indicated that CO₂ emission value from trenching in Nglanggeran's community forest ranged from 0,47-103,217 g CO₂/m²/h were obtained from soil temperature ranging of 24,9 - 26°C and soil moisture ranging of 26,06-37,13%. Those environmental factors have low influence to CO₂ emissions caused by the lack of sample number and narrow ranges of obtained data. Fluctuation of CO₂ emissions (102,747 g CO₂/m²/h) was caused by inhibition of CO₂ gas out of the ground due to puddle of water (0,47 g CO₂/m²/h) which produced low emission. While high emission (103,217 g CO₂/m²/h) occurred due to the abundance of soil organism, particularly macro-organism (worms and ants) that are uneven in isolated soil trench.

Keywords: CO₂ emission, trenching, closed dynamic chamber, soil organism