

**AKUMULASI SERESAH DAN LAJU RESPIRASI TANAH
PADA TIGA TIPE FISIOGNOMI TERKAIT CENDANA
(*Santalum album* Linn.) DI HUTAN WANAGAMA I, GUNUNG KIDUL,
YOGYAKARTA**

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INTISARI

Hutan Wanagama I merupakan contoh hutan tropis di Yogyakarta. Cendana telah ditanam di Wanagama I yaitu fisiognomi 1 (petak 7), fisiognomi 2 (petak 16) dan fisiognomi 3 (petak 5), yang dalam perkembangannya hidup di 3 fisiognomi. Fisiognomi adalah kenampakan luar dari suatu lahan yang dapat diketahui dari penutupan lahan, pertumbuhan dan persebaran vegetasinya. Pada hutan tropis seperti hutan Wanagama, perpindahan hara terjadi dalam siklus hara tertutup dimana jembatan antara vegetasi dan tanah adalah seresah. Unsur hara pada seresah dapat dimanfaatkan kembali oleh vegetasi jika melalui dekomposisi oleh mikroorganisme dekomposer. Aktivitas mikroorganisme tersebut dalam mendekomposisi dapat diukur lewat laju respirasi tanah. Penelitian ini bertujuan untuk mengetahui akumulasi seresah dan laju respirasi tanah pada 3 tipe fisiognomi Cendana.

Plot pengukuran 1x1 m dibuat pada musim kemarau dan hujan di 3 fisiognomi Cendana di Wanagama dengan 3 ulangan pada masing-masing fisiognomi. Seresah pada plot diambil dan dipisahkan menurut tingkat dekomposisinya lalu dioven hingga dicapai berat kering. Seresah segar (*Litter*) daun dianalisis kandungan C dan N jaringan agar didapat nilai C/N Ratio. Laju respirasi tanah diukur dengan menghitung produksi CO₂ selama \pm 24 jam dalam sungkup plastik 20x20 cm yang diletakkan pada permukaan tanah. Diamati pula kondisi lingkungan (suhu lingkungan, suhu tanah, kelembaban tanah dan intensitas cahaya) sebagai data pendukung.

Hasil penelitian menunjukkan seresah total hutan Wanagama I, yang berkisar antara 12-15 ton/ha masuk dalam kisaran akumulasi seresah normal hutan tropis (5-15 ton/ha). Akumulasi seresah musim hujan lebih rendah daripada kemarau karena mikroorganisme dekomposer lebih aktif saat musim hujan. Hal ini ditunjukkan oleh laju respirasi tanah yang lebih tinggi di musim hujan. Selain itu seresah musim hujan lebih mudah terdekomposisi, yang dapat diketahui dari C/N Rationya yang rendah.

Kata kunci: Akumulasi seresah, laju respirasi tanah, musim kemarau, musim hujan, fisiognomi, Cendana.

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**LITTER ACCUMULATION AND SOIL RESPIRATION RATE
ON THREE TYPES OF PHYSIOGNOMY RELATED TO SANDALWOOD
(*Santalum album* Linn.) IN WANAGAMA I FOREST, GUNUNG KIDUL,
YOGYAKARTA.**

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ABSTRACT

Wanagama I Forest is a type of tropical forest in Yogyakarta. Sandalwood (*Santalum album* Linn.) has been introduced to Wanagama I in 1968. In its development, Sandalwood grows in 3 types of physiognomy, namely physiognomy 1 (compartment 7), physiognomy 2 (compartment 16) and physiognomy 3 (compartment 5). Physiognomy is a physical appearance of a certain landscape that is characterized by land cover, vegetation growth and distribution. In tropical forest, like Wanagama I, nutrition flow occurs in a closed nutrition cycle where litter mediates transformation between vegetation and soil. Nutrition in litter can be reused by vegetation after decomposition process by microorganisms. This process can be estimated by measuring the soil respiration rate. This research aimed to assess litter accumulation and soil respiration rate on three types of Sandalwood physiognomy.

Measurement was made in 1x1 m plot in dry and rainy season in 3 types of Sandalwood physiognomy in Wanagama I with 3 replications each type. Litter was collected and separated based on its decomposition level then dried in an oven until constant dry weight. C and N content of leaf litter was analyzed to measure C/N Ratio. Soil respiration rate was assessed by estimating CO₂ production for \pm 24 hours inside plastic cover placed on 20x20 cm soil surface. Soil temperature, moisture and light intensity, which affected the decomposition rate, were also measured.

Result of this research showed that total litter accumulation in Wanagama I Forest was around 12-15 tons/ha, that was in normal range of litter accumulation in tropical forest (5-15 tons/ha). Litter accumulation in rainy season was lower than dry season for higher microorganism activity on rainy season. It was explained by higher soil respiration rate on rainy season. Moreover, litter on rainy season was decomposed easier because of the lower C/N Ratio.

Key word: Litter accumulation, soil respiration rate, dry season, rainy season, physiognomy, Sandalwood.

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