

POTENSI BIOMASSA, KARBON DAN SERAPAN GAS CO₂ JENIS GAMAL (*Gliricidia sepium*) BAGIAN ABOVE GROUND DI HUTAN PENDIDIKAN WANAGAMA I, YOGYAKARTA

INTISARI

Gamal (*Gliricidia sepium*) merupakan spesies tumbuhan yang memiliki banyak kegunaan sehingga dikenal sebagai *multipurpose tree species*. Namun demikian, potensi gamal secara kuantitatif dalam menyimpan karbon belum banyak diketahui. Penelitian ini bertujuan untuk (1) Mengetahui kandungan biomassa dan karbon bagian *above ground* jenis jenis Gamal (*Gliricidia sepium*) di Hutan Pendidikan Wanagama I, (2) menentukan model penduga biomassa dan karbon untuk jenis pohon Gamal (*Gliricidia sepium*), (3) mengetahui potensi Gamal (*Gliricidia sepium*) di Hutan Pendidikan Wanagama I dalam menyimpan biomassa dan karbon, dan (4) mengetahui potensi serapan gas CO₂ pada spesies Gamal (*Gliricidia sepium*) bagian *above ground* (atasan).

Lima belas batang gamal dengan variasi diameter dari 1-15 cm ditebang sebagai sampel untuk membuat model penduga biomassa, karbon dan serapan gas CO₂ bagian atasan. Pengambilan sampel ini dilakukan di petak 5 dengan umur penanaman 34 tahun. Kandungan biomassa dihitung dengan cara mengeringkan sampel batang dan cabang pada suhu 103±2°C serta daun pada suhu 60±2°C hingga mencapai berat kering konstan. Kandungan karbon diperoleh dengan analisis spektrofotometri, sedangkan serapan gas CO₂ diperoleh dengan rumus perbandingan massa atom.

Kandungan biomassa rata-rata pada pohon gamal sampel bagian atasan adalah sebagai berikut: organ batang 23,24 kg, organ cabang 12,65 kg, dan organ daun 0,29 kg/pohon, sedangkan rata-rata kandungan karbonnya adalah organ batang 11,06 kg, organ cabang 5,74 kg, dan organ daun 0,12 kg/pohon. Model penduga biomassa dan karbon gamal bagian atasan adalah sebagai berikut: biomassa $B_t = 0,084(D)^{2,638}$ ($R^2 = 0,924$), karbon $C_t = 0,036(D)^{2,672}$ ($R^2 = 0,924$). Potensi biomassa dan karbon gamal bagian atasan di Wanagama I adalah sebagai berikut: biomassa $CI_{0,95} = 82,513 \pm 3,075$ ton/ha, karbon $CI_{0,95} = 38,430 \pm 1,574$ ton/ha. Potensi serapan gas CO₂ gamal bagian atasan di Wanagama I adalah $CI_{0,95} = 140,909 \pm 8,617$ ton/ha.

Kata kunci: Biomassa, Karbon, CO₂, gamal, atasan, Hutan Pendidikan Wanagama I

**THE POTENCY OF BIOMASS, CARBON, AND CO₂ ABSORPTION OF
Gliricidia sepium SPECIES AT ABOVE GROUND LEVEL
IN WANAGAMA I TEACHING FOREST, YOGYAKARTA**

ABSTRACT

Gliricidia sepium is a tree species which has many function so that it is known as multipurpose tree species. However, the potential of *G. sepium* quantitatively in terms of carbon storage has not yet been known excessively. The purposes of this research are: (1) to know the biomass and carbon content at above ground level of *G. sepium* in Wanagama I Teaching Forest. (2) To build an estimation model of biomass and carbon of *G. sepium*. (3) to know the potential of *G. sepium* in Wanagama I Teaching Forest in terms of biomass and carbon storage, and (4) to know the potential of CO₂ absorption of *G. sepium* at above ground level.

Fifteen *G. sepium* with various diameters from 1-15 cm were cut as samples to build model for estimating biomass, carbon, and CO₂ absorption at above ground level. These samples were taken at compartment 5 with the plantation age of 34 years old. The biomass content was determined by drying up the samples of stem and branch at the temperature of 103±2°C and also leaf samples at the temperature of 60±2°C until reaching the constant dry weight. The carbon content was obtained by *spectrophotometric* analysis. The CO₂ absorption was obtained by the atomic mass ratio.

The average of biomass content in *G. sepium* samples at above ground level are as follow: stem organ 23,24 kg, branch organ 12,65 kg, and leaf organ 0,29 kg, while the average of carbon content are as follow: Stem organ 11,06 kg, branch organ 5,74 kg, and leaf organ 0,12 kg. The estimation model of biomass and carbon of *G. sepium* at above ground level are as follow: biomass $B_t = 0,084(D)^{2,638}$ ($R^2 = 0,924$), carbon $C_t = 0,036(D)^{2,672}$ ($R^2 = 0,924$). The potential biomass and carbon of *G. sepium* at above ground level in Wanagama I Teaching Forest are as follow: biomass $CI_{0,95} = 82,513 \pm 3,075$ ton/ha, carbon $CI_{0,95} = 38,430 \pm 1,574$ ton/ha. The potential of CO₂ absorption of *G. sepium* at above ground level in Wanagama I Teaching Forest is $CI_{0,95} = 140,909 \pm 8,617$ ton/ha.

Key words: Biomass, Carbon, CO₂, *Gliricidia sepium*, above ground, Wanagama I Teaching Forest