

STUDI KANDUNGAN KARBON PADA BERBAGAI ORGAN POHON SENGON (*Paraserianthes falcataria* (L.) Nielsen)

Oleh :
Fitrianus¹Ris Hadi Purwanto²J.P. Gentur Sutapa³

RINGKASAN

Pohon sengon (*Paraserianthes falcataria* (L) Nielsen) merupakan salah satu pohon yang banyak dikembangkan di kawasan hutan rakyat. Di Kabupaten Banyumas dan Wonosobo hutan rakyat jenis sengon banyak dikembangkan. Oleh karena itu perlu adanya penelitian dalam mengetahui kandungan karbon pada pohon sengon yang ada di dua kabupaten tersebut kemudian membangun suatu perangkat kuantifikasinya dalam bentuk persamaan allometrik untuk mengestimasi kandungan karbonnya.

Metode pengambilan data pada penelitian ini menggunakan teknik *destructive sampling*. Sampel pohon ditebang, dipisahkan berdasarkan organnya, kemudian ditimbang berat basah totalnya. Dari tiap organ diambil sampel secukupnya lalu ditimbang berat basah sampel tersebut. Sampel kemudian dibawa ke laboratorium untuk di analisis. Biomassa tiap organ dianalisis dengan dioven pada suhu 105°C sampai berat kering konstan. Sedangkan kandungan karbon dianalisis melalui proses karbonisasi dengan retort listrik selama 4 jam dengan suhu sekitar 450° C.

Dari hasil penelitian diperoleh rata-rata kandungan karbon pada berbagai organ pohon sengon di Kabupaten Wonosobo yaitu pada batang 15,670 kg/pohon (79,54 %), akar 2,329 kg/pohon (11,37 %), cabang 1,398 kg/pohon (5,74 %), dan daun 0,354 kg/pohon (3,35 %), sedangkan total karbon per pohon sebesar 19,571 kg. Di Kabupaten Banyumas diperoleh kandungan karbon yaitu pada batang 14,623 kg/pohon (70,60 %), akar 2,880 kg/pohon (14,68 %), cabang 1,883 kg/pohon (5,74 %), dan daun 0,474 kg/pohon (4,63 %), sedangkan total karbon per pohon sebesar 19,860 kg. Dari hasil analisis diperoleh hubungan antara diameter setinggi dada (D) dengan kandungan karbon (C) pada pohon sengon dalam bentuk persamaan allometrik, di Kabupaten Wonosobo diperoleh $C_{akar}=0,0036D^{2,2893}$ ($R^2=0,8621$), $C_{batang}=0,0198D^{2,3988}$ ($R^2=0,9031$), $C_{cabang}=0,0002D^{3,0342}$ ($R^2=0,9031$) $C_{daun}=0,0157D^{2,1061}$ ($R^2=0,9031$), $C_{total}=0,0262D^{2,3796}$ ($R^2=0,9095$). Di Kabupaten Banyumas diperoleh $C_{akar}=0,0012D^{2,7935}$ ($R^2=0,9375$), $C_{batang}=0,0032D^{3,0544}$ ($R^2=0,9652$), $C_{cabang}=0,001D^{2,6908}$ ($R^2=0,9222$) $C_{daun}=0,002D^{2,0017}$ ($R^2=0,8084$), $C_{total}=0,0061D^{2,9312}$ ($R^2=0,9632$). Persamaan allometrik $C_{total}=0,0262D^{2,3796}$ diterapkan untuk mengestimasi kandungan karbon pada hutan rakyat di Dusun Kebondalem Desa Sukorejo Kecamatan Mojotengah Kabupaten Wonosobo dan diperoleh kandungan karbon rata-rata pada hutan rakyat sengon sebesar 7,532 ton/ha. Persamaan allometrik $C_{total}=0,0061D^{2,9312}$ diterapkan untuk mengestimasi kandungan karbon pada hutan rakyat di Dusun III Desa Panusupan Kecamatan Cilongok Kabupaten Banyumas dan diperoleh kandungan karbon rata-rata pada hutan rakyat sengon sebesar 13.459,13 ton/ha.

Kata Kunci : pohon sengon, karbon, persamaan allometrik, hutan rakyat

¹Mahasiswa Jurusan Manajemen Hutan, Fakultas Kehutanan UGM

² Dosen Jurusan Manajemen Hutan, Fakultas Kehutanan UGM

³ Dosen Jurusan Teknologi Hasil Hutan, Fakultas Kehutanan UGM

The Study of Carbon Contents in Different Organ of Sengon Tree
(*Paraserianthes falcataria* (L.) Nielsen)

By:

Fitrianus¹Ris Hadi Purwanto² J.P. Gentur Sutapa³

Abstract

Sengon trees has been developed widely in community forestry in Wonosobo District and Banyumas District. Therefore, it is necessary to conduct research to get information of carbon contents of sengon trees in both district and then built quantification formula that follow as allometric equations for estimating carbon contents of sengon trees.

The method used in this research was destructive sampling technique. Trees sample was cut, separate each organs, then measured the total fresh weight. From the each organs were take sufficient sample to measured its fresh weight. Sample was take to the laboratory to get analyzed. Biomass of each organs were analyzed by drying in oven at 105°C until to the constant of dry weight. Meanwhile, analyzed of carbon contents was through carbonization process by used the electricity retort for 4 hours at 450°C.

The result of the research were obtained the average of carbon content of each organs of sengon trees in Wonosobo district were: stem 15,670 kg/tree (79,54 %), roots 2,329 kg/tree (11,37 %), branches 1,398 kg/tree (5,74 %), dan leaves 0,354 kg/tree (3,35 %), total carbon content per tree was 19,571 kg. In Banyumas District were: stem 14,623 kg/tree (70,60 %), roots 2,880 kg/tree (14,68 %), branches 1,883 kg/tree (5,74 %), dan leaves 0,474 kg/tree (4,63 %), total carbon content per tree was 19,860 kg. From result of the analyzed obtained relationship between diameter breast height (D) with carbon content of each organ of sengon tree in allometric equation, in Wonosobo district obtained: $C_{\text{roots}}=0,0036D^{2,2893}$ ($R^2=0,8621$), $C_{\text{stem}}=0,0198D^{2,3988}$ ($R^2=0,9031$), $C_{\text{branches}}=0,0002D^{3,0342}$ ($R^2=0,9031$) $C_{\text{leaves}}=0,0157D^{2,1061}$ ($R^2=0,9031$), $C_{\text{total}}=0,0262D^{2,3796}$ ($R^2=0,9095$). In Banyumas Distric obtained $C_{\text{roots}}=0,0012D^{2,7935}$ ($R^2=0,9375$), $C_{\text{stem}}=0,0032D^{3,0544}$ ($R^2=0,9652$), $C_{\text{branches}}=0,001D^{2,6908}$ ($R^2=0,9222$) $C_{\text{leaves}}=0,002D^{2,0017}$ ($R^2=0,8084$), $C_{\text{total}}=0,0061D^{2,9312}$ ($R^2=0,9632$). The allometric equation $C_{\text{total}}=0,0262D^{2,3796}$ was applied to estimated carbon content of community forestry in Kebondalem orchard Sukorejo Village Wonosobo District and we obtained the average of carbon contents in community forestry with sengon tree was 7,532 ton/ha. The allometric equation $C_{\text{total}}=0,0061D^{2,9312}$ was applied to estimated carbon content of community forestry in 3th orchard Panusupan Village Banyumas District and we obtained the average of carbon contents in community forestry with sengon tree was 13.459,13 ton/ha.

Keyword: sengon tree, carbon contents, allometric equation, community forestry

¹Student of Forest Management, Forestry Faculty, Gadjah Mada University

²Lecturer of Forest Managemen, Forestry Faculty, Gadjah Mada University

³Lecturer of Technological of Forest Result, Forestry Faculty, Gadjah Mada University