

INTISARI

SIFAT ENERGI BIOMASSA DAN ARANG POHON KARET

(*Hevea brasiliensis* Muell. Arg.) PASCA PENYADAPAN

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Pohon Karet merupakan tanaman penghasil getah Karet yang dapat ditemukan di berbagai daerah di Indonesia. Riau adalah salah satu daerah dengan kebun karet terluas, sehingga mampu memproduksi karet dalam jumlah tinggi. Produksi pengolahan karet yang tinggi berdampak langsung pada peningkatan limbah tebang pohon Karet. Pemanfaatan dan penanggulangan limbah tebang tersebut perlu dilakukan salah satunya untuk energi biomassa. Informasi mengenai karakteristik energi limbah tebang pohon karet khususnya dari perkebunan rakyat di Kab. Kampar, Prov. Riau masih terbatas. Penelitian ini bertujuan mengetahui karakteristik sifat energi biomassa limbah pohon Karet pasca penyadapan dan pengaruh proses pengarangan terhadap sifat energi arang biomassa Karet pasca penyadapan.

Bahan penelitian ini berupa 3 pohon karet berumur 27 tahun dari Kab. Kampar, Prov. Riau. Penelitian menggunakan rancangan acak lengkap faktorial dengan dua faktor yaitu proses pengarangan (biomassa tidak diarangkan dan diarangkan pada suhu 350°C) dan bagian pohon (batang bawah, batang atas, cabang, ranting dan daun). Pengukuran dan pengujian yang dilakukan adalah pengukuran biomassa total, rendemen, sifat fisik (kadar air, berat jenis, dan nilai kalor), dan sifat proksimat (kadar abu, kadar zat menguap, karbon terikat).

Bagian pohon berbeda menunjukkan perbedaan nyata pada nilai kalor, kadar volatil, kadar abu dan karbon terikat. Sedangkan pada berat jenis berbeda sangat nyata pada bagian ranting dan daun. Berat jenis biomassa adalah 0,58, nilai kalor 4724,42 kal/g, kadar volatil 80,01 %, kadar abu 2,98 %, dan karbon terikat 16,99 %. Kombinasi perlakuan terbaik pada limbah tebang kayu karet adalah arang 350°C bagian batang bawah dengan nilai rata-rata berat jenis sebesar 0,62, kadar abu sebesar 8,93%, kadar volatil sebesar 20,79%, nilai kalor sebesar 5908,97 kal/g.

Kata kunci : Pohon Karet, Bagian Pohon, Sifat Fisik, Sifat Proksimat, Arang

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ABSTRACT

ENERGY CHARACTERISTICS OF BIOMASS AND CHARCOAL OF POST-TAPPING RUBBER TREE (*Hevea brasiliensis* Muell. Arg.)

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The rubber tree (*Hevea brasiliensis* Muell. Arg.) is a species of rubber tree that can be found in many places in Indonesia. Riau province has one of the largest rubber tree plantation area, therefore resulting in high rubber production. High productivity of rubber manufacturing yields significant amount of rubber tree waste. Utilization of these waste needs to be optimized, one of which is by generating biomass energy. Information regarding the characteristics of waste energy derived from rubber tree waste, specially in the plantations of Kampar region in Riau, is still limited. Therefore, this study aims to understand the energy characteristics of various types of waste biomass derived from post-tapping rubber trees, and to understand the interactions between the different sections of the tree and the conditioning temperature, in terms of biomass energy characteristics resulted from post-tapping rubber trees.

Materials used in this study were taken from three 27-year old rubber trees located in the Kampar region of Riau. This study uses a completely randomized factorial design with two factors, i.e. carbonized (consisting of unconditioned charcoal and conditioned charcoal in a controlled 350°C temperature) and part of the rubber tree (upper stem, the lower stem, branches, twigs, and leaf). Measurement and testing were done on several attributes, including total biomass measurement, yield, physical properties (moisture content, specific gravity, and calorific value), and proximate analysis (ash content, volatility, fixed carbon).

Different parts of the tree shows significant different values affected the calorific value, volatility, ash content, and fixed carbon. Moreover, highly significant difference of specific gravity was found between the branch and leaf parts. The specific gravity of biomass was 0.58, calorific value 4724.42 kal/g, volatility 80.01%, ash content 2.98%, and bonded carbon 16.99%. Best combined treatment of rubber tree waste was found on charcoal of the lower part of the stem in a 350°C temperature, with an average specific gravity of 0.62, ash content 8.93%, volatility 20.79%, and a calorific value of 5908.97 kal/g.

Keyword: Rubber tree, Tree section, Physical properties, Proximate analysis, Charcoal

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