

Pengaruh Proporsi Bahan Baku dan Ukuran Partikel terhadap Kualitas Pelet Campuran Pelepah Salak (*Salacca zalacca*) dan Tempurung Kelapa (*Cocos nucifera*)

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INTISARI

Potensi limbah pelepah salak (PS) sangat besar untuk dijadikan pelet karena ketersediaannya melimpah. Akan tetapi, limbah pelepah salak memiliki nilai kalor yang rendah sehingga perlu dicampur bahan lain seperti tempurung kelapa (TK) yang memiliki nilai kalor yang lebih tinggi. Penelitian ini bertujuan untuk mengetahui pengaruh variasi proporsi bahan baku dan ukuran partikel terhadap kualitas pelet campuran limbah pelepah salak dan tempurung kelapa.

Penelitian ini dilakukan dengan menggunakan rancangan acak lengkap dengan dua faktor yaitu proporsi bahan baku (PS 80% TK 20%, PS 70% TK 30%, PS 60% TK 40%) dan ukuran partikel (40 – 60 mesh dan 60 – 80 mesh). Pelet dalam penelitian ini dicetak menggunakan metode *single pelletizing*. Parameter kualitas pelet diukur dengan sifat fisika (berat jenis dan kekuatan tekan radial), sifat proksimat (kadar air, kadar zat mudah menguap, kadar abu, dan kadar karbon terikat), dan nilai kalor pelet.

Hasil penelitian menunjukkan bahwa pelet terbaik terdapat pada variasi proporsi bahan baku 60% PS dan 40% TK dengan ukuran partikel 40 – 60 mesh yang memiliki rata-rata berat jenis 0,959, kekuatan tekan radial 359,586 N, kadar air 7,010%, kadar zat mudah menguap 83,820%, kadar abu 2,706%, kadar karbon terikat 13,475%, dan nilai kalor 4376 kal/g. Pelet campuran PS dan TK dapat dijadikan sebagai bahan baku pembuatan pelet, tetapi butuh perlakuan lain karena mengandung kadar zat mudah menguap dan kadar abu yang tinggi.

Kata Kunci: *pelepah salak, tempurung kelapa, ukuran partikel, pelet*

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Effect of Raw Material Proportion and Particle Size on The Quality of Mixed Pellets from Salacca Fronds (*Salacca zalacca*) and Coconut Shell (*Cocos nucifera*)

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ABSTRACT

Salacca fronds (SF) waste has great potential as a source of pellets due to its abundant availability. However, Salacca fronds waste has a low calorific value, necessitating the addition of other materials such as coconut shell (CS) with a higher calorific value. This study investigates the influence of variations in raw material proportion and particle size on the quality of mixed pellets from salacca fronds waste and coconut shell.

The study employed a completely randomized design with two factors: raw material proportion (SF 80% CS 20%, SF 70% CS 30%, SF 60% CS 40%) and particle size (40–60 mesh and 60–80 mesh). The pellets were molded using the single pelletizing method. The pellet quality parameters were measured based on physical properties (bulk density and radial compressive strength), proximate properties (moisture content, volatile matter content, ash content, and fixed carbon content), and calorific value.

The results showed that the best pellet was obtained at a raw material proportion of 60% SF and 40% CS with a particle size of 40 – 60 mesh. This combination yielded an average specific gravity 0.959, radial compressive strength 359.586 N, moisture content 7.010%, volatile matter content 83.820%, ash content 2.706%, fixed carbon content 13.475%, and calorific value 4376 cal/g. The mixed pellets of SF and CS can be used as raw material for pellet production, but further treatment is required due to their high volatile matter and ash content.

Keyword: *salacca fronds, coconut shell, particle size, pellets*

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