DESAIN RANTAI PASOK DAN PENINGKATAN NILAI TAMBAH LIMBAH PETIOLE PELEPAH SAWIT UNTUK BIOPELLET SERTA PEMANFAATANNYA UNTUK INDUSTRI DAN RUMAH TANGGA

(Supply Chain Design and Added Value Improvement of Palm Oil Frond for Biopellet and Its Aplication for Industry and Household)

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ABSTRAK

Pelepah sawit merupakan salah satu biomassa limbah pertanian yang cukup banyak terdapat di Indonesia. Salah satu pemanfaatan pelepah sawit adalah sebagai biopelet. Tidak semua bagian pelepah dapat dimanfaatkan untuk pelet, hanya bagian petiole (antar pangkal pelepah dan daun) saja. Berdasarkan hasil pengujian sebelumnya, nilai kalor pembakaran biopelet pelepah sawit adalah 3.650 kkal/kg. Nilai kalori ini tidak memadai dan belum bisa bersaing dengan batubara. Oleh karenanya perlu dilakukan penambahan bahan lain yang memiliki nilai kalori yang lebih tinggi seperti bungkil jarak pagar. Pada penelitian ini dilakukan penambahan bungkil jarak pagar sebanyak 25% (formula 1) dan 50% (formula 2). Penambahan 25 dan 50% bungkil jarakdapat meningkatkan nilai kalor sebesar 5184 kkal/kg dan 4864 kkal/kg. Berdasarkan karakteristik nilai kalor pembakaran, biopelet formula 1 merupakan biopelet terbaik, dengan karakteristik: kadar air sebesar 9,96 % (bb), kadar abu 5,52 % (bk), nilai kalori 5184 kkal/kg. Kedua formula biopelet mudah terbakar dengan rincian : biopelet formula 1 membutuhkan waktu 05:09 menit untuk mendidihkan 1 liter air, terbakar selama 25:06 menit dan menghasilkan abu sisa sebanyak 162 gram. Sedangkan biopelet formula 2 membutuhkan waktu 06:13 menit untuk mendidihkan 1 liter air, terbakar selama 29:48 menit dan menghasilkan abu sisa sebanyak 160 gram.

Kata kunci: Biopelet, petiole, kalori.

ABSTRACT

Oil palm frond is a biomass from agricultural waste which is abundantly available in Indonesia. This waste can be process into biopellet for energy source. However, only petiole; part of the palm frond which has no leaves and is located near the trunk; can be used for this purposes. Based on the previous results, the petiole-pellet only gave 3650 kcal/kg. This value, off course, was lower than coal. It is therefore, it needs other material to improve its calorie. The potential material is jatropha seed cake. In this study, jatropha seed cakes was added into formula with 25% (formula 1) and 50% (formula 2). Adding 25 and 50% of jatropha seed cake resulted on combustion calorific value of 5184 kcal/kg and 4864 kcal/kg respectively. Based on the characteristics of the combustion, biopellet formula 1 was the best and produced product with the characteristic of water content of 9.96% (wet basis), 5.52% ash content (dry basis), calorific value of 5184 kcal/kg. Both formulas were easy to burn. Biopellet formula 1 took 05:09 minutes to boil 1 liter of water, burned for 25:06 minutes and produced ash as much as 162 grams. Whereas formula 2 took 06:13 minutes to boil 1 liter of water, burned for 29:48 minutes and produced ash as much as 160 grams.

Keywords: Biopellet, petiole, calorie.