

ABSTRAK

Tiadaanya pengembalian lapisan *topsoil* kepermukaan tanah pada saat merekonstruksi tubuh tanah pasca tambang mengakibatkan tanah kehilangan C-organik secara signifikan. Semakin tinggi kadar C-organik dan partikel lempung tanah, semakin mantap kualitas struktur tanah. Penelitian ini bertujuan untuk mengkaji efek dan mendapatkan dosis optimum aplikasi batubara, *biochar*, dan kompos terhadap pembentukan dan kemantapan agregat serta pertumbuhan tanaman lengkung. Penelitian ini dilaksanakan di Tanah Reklamasi Tambang Batubara PT. Nan Riang yang dimulai dari Bulan Agustus hingga Oktober Tahun 2021. Rancangan penelitian yang digunakan adalah RAK (rancangan acak kelompok) dengan 9 perlakuan dan 3 kelompok sehingga terdapat 27 tapak lubang tanam. Peubah tanah yang diamati adalah C-organik, persen agregat terbentuk, kemantapan agregat, BV, TRP, pertambahan tinggi tanaman. Analisis data menggunakan sidik ragam dilanjutkan dengan uji DNMRT (*Duncan New Multiple Range Test*) untuk melihat pengaruh dari perlakuan. Hasil Penelitian menunjukkan bahwa pemberian batubara *sub bituminous*, *biochar* jabon, dan kompos pelepah kelapa sawit berpengaruh nyata terhadap kemantapan agregat, BV, TRP, dan pertambahan tinggi tanaman. Pemberian perlakuan *biochar* jabon menghasilkan pengaruh yang terbaik terhadap sifat fisik dan pertambahan tinggi tanaman dengan dosis 20 ton/ha, sedangkan perlakuan campuran batubara *sub bituminous* dan *biochar* jabon yaitu dosis 30 ton/ha, dan untuk perlakuan kompos pelepah kelapa sawit adalah dosis 30 ton/ha. Secara keseluruhan, perlakuan yang memberikan pengaruh terbaik terhadap sifat fisik dan pertambahan tinggi tanaman adalah perlakuan kompos pelepah kelapa sawit dengan dosis 30 ton/ha.

Kata kunci : Batubara, *biochar*, kompos, tanah reklamasi tambang batubara, lengkung

ABSTRACT

Coal mine reclamation land physically has a soil structure damaged by compaction, increased unit weight, decreased capacity of water infiltration into the soil. The absence of returning the topsoil layer to the soil surface when reconstructing a post-mining soil body results in a significant loss of C-organic soil. The higher the content of C-organic and soil clay particles, the more stable the quality of the soil structure that is formed. This study aims to examine the effect and obtain the optimum dosage of coal, *biochar*, and compost application on the formation and stability of aggregates and growth of longan plants. This research was conducted at the Coal Mine Reclamation Land of PT. Nan Riang which starts from August to October 2021. The research design used in this study was RAK (randomized block design) with 9

treatments and 3 groups so that there were 27 planting hole sites. The observed soil variables were C-organic, the percentage of aggregates formed, the stability of the aggregates, BV and TRP, while for plants was the increase in plant height. Data analysis using variance was followed by the DNMRT (Duncan New Multiple Range Test) test to see the effect of the treatment. The results showed that the application of sub-bituminous coal, jabon biochar, and palm frond compost had a significant effect on aggregate stability, BV, TRP, and plant height gain. The treatment of jabon biochar produced the best effect on physical properties and plant height gain at a dose of 20 tons/ha, while the treatment of a mixture of sub-bituminous coal and jabon biochar was a dose of 30 tons/ha, and for the treatment of palm frond compost was a dose of 30 tons/ha. Ha. Overall, the treatment that had the best effect on physical properties and plant height gain was the treatment of oil palm frond compost at a dose of 30 tonnes/ha.

Key word : Coal, biochar, compost, aggregate, coal mine reclamation land, longan