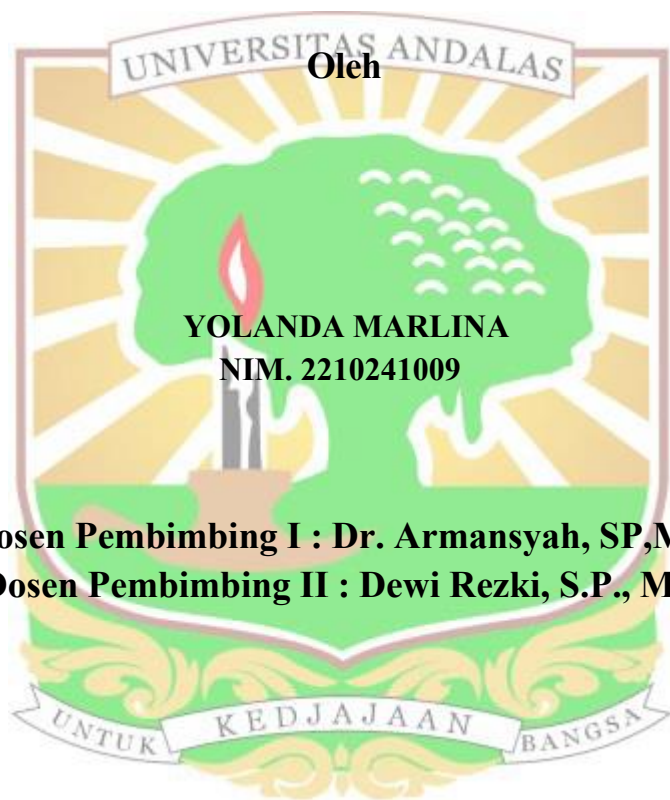


**PENGARUH DOSIS KAPUR LIMBAH KARBIT DAN ABU
BOILER CANGKANG KELAPA SAWIT TERHADAP
PERTUMBUHAN BIBIT KAKAO (*Theobroma cacao* L.) BL50**

SKRIPSI



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**FAKULTAS PERTANIAN
UNIVERSITAS ANDALAS
DHARMASRAYA
2026**

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ABSTRAK

Keterbatasan tanah Ultisol sebagai media tanam bibit kakao BL50 terletak pada keasaman tinggi dan rendahnya ketersediaan hara. Penelitian ini bertujuan mengevaluasi pengaruh interaksi kapur limbah karbit dan abu boiler cangkang kelapa sawit terhadap perbaikan sifat kimia tanah serta pertumbuhan bibit kakao. Percobaan dilaksanakan Desember 2025–Juni 2026 menggunakan Rancangan Acak Lengkap faktorial 5×3 dengan tiga ulangan. Faktor yang diuji adalah dosis limbah karbit (0, 5, 10, 15, dan 20 %/polybag) dan abu boiler (0, 450, 500 g/polybag), meliputi pengamatan sifat kimia media serta pertumbuhan morfologi dan biomassa bibit. Data dianalisis dengan ANOVA taraf 5% dilanjutkan uji DMRT. Hasil menunjukkan kapur limbah karbit dan abu boiler cangkang kelapa sawit memberikan interaksi terhadap seluruh variabel yang diamati. Limbah karbit 5% paling efektif memperbaiki sifat kimia tanah, sedangkan abu boiler 500 g/polybag menghasilkan pertumbuhan terbaik dengan bobot segar tajuk 25,56 g, bobot kering tajuk 7,66 g, dan bobot segar akar 15,26 g. Penggunaan kombinasi kedua limbah ini disarankan pada takaran rendah hingga sedang guna mengoptimalkan ketersediaan hara dan mencegah lonjakan pH berlebih.

Kata kunci: Abu boiler, Amelioran, Kimia tanah, Tanah Ultisol, dan Unsur hara.

THE EFFECT OF CARBIDE WASTE LIME AND OIL PALM SHELL BOILER ASH DOSAGES ON THE GROWTH OF BL50 COCOA (*Theobroma Cacao* L.) SEEDLINGS

ABSTRACT

Ultisol soil is limited as a growing medium for BL50 cocoa seedlings due to high acidity and low nutrient availability. This study aimed to evaluate the interactive effect of carbide waste lime and palm oil shell boiler ash on improving soil chemical properties and vegetative growth of BL50 cocoa seedlings. The experiment was conducted from December 2025 to June 2026 using a 5×3 factorial Completely Randomized Design with three replications. Treatments consisted of five carbide waste doses (0, 5, 10, 15, 20 %/polybag) and three boiler ash rates (0, 450, 500 g/polybag). Observed variables included soil chemical properties (pH, total-N, available-P, available-K, organic-C), seedling morphology, and biomass. Data were analyzed using analysis of variance at the 5% significance level, followed by Duncan's New Multiple Range Test. Results showed a significant interaction between both amendments on all observed variables. Carbide waste at 5% (150 g/polybag) was most effective in restoring soil chemical characteristics, while boiler ash at 500 g/polybag produced the best growth performance: 25.56 g shoot fresh weight, 7.66 g shoot dry weight, and 15.26 g root fresh weight. The combined use of these industrial waste-based amendments is recommended at low to moderate rates to optimize nutrient availability and prevent excessive soil pH increase.

Keywords: Ameliorants, Boiler ash, Nutrients, soil chemistry, and Ultisol soil.