

INTISARI

Lahan pascatambang umumnya mengalami degradasi yang ditandai dengan kondisi tanah yang masam, padat, miskin bahan organik, serta rendah kandungan hara. Penelitian ini bertujuan untuk menganalisis pengaruh fly ash dan kalium humat sebagai pembenah tanah dalam memperbaiki sifat kimia tanah serta meningkatkan *recovery rate* tanaman angsana (*Pterocarpus indicus*). Metode yang digunakan adalah Rancangan Acak Lengkap (RAL) non-faktorial dengan delapan taraf perlakuan meliputi bokashi 2 ton/ha (B100), bokashi 1 ton/ha (B50), *fly ash* 1 ton/ha + bokashi 1 ton/ha (F100B50), *fly ash* 500 kg/ha + bokashi 1 ton/ha (F50B50), *fly ash* 1 ton/ha + kalium humat 20 kg/ha + bokashi 1 ton/ha (F100H100B50), *fly ash* 1 ton/ha + kalium humat 20 kg/ha + bokashi 1 ton/ha (F50H100B50), *fly ash* 1 ton/ha + kalium humat 10 kg/ha + bokashi 1 ton/ha (F100H50B50), dan *fly ash* 500 kg/ha + kalium humat 10 kg/ha + bokashi 1 ton/ha (F50H50B50), dimana seluruh perlakuan tersebut merupakan kombinasi *fly ash* (F), kalium humat (H), dan bokashi (B) yang diulang sebanyak empat kali. Parameter yang diamati mencakup sifat kimia tanah dan parameter tanaman. Hasil penelitian menunjukkan bahwa aplikasi kombinasi pembenah tanah mampu memperbaiki sifat kimia tanah dan meningkatkan *recovery rate* tanaman dibandingkan kontrol sebesar 25%. Perlakuan terbaik ditunjukkan oleh kombinasi *fly ash* 500 kg/ha + kalium humat 10 kg/ha + bokashi 1 ton/ha (F50H50B50) yang memberikan respons paling optimal. Kombinasi tersebut menunjukkan efisiensi dosis dimana pengurangan jumlah bokashi hingga 50% tetap mampu mempertahankan kualitas tanah dan pemulihan tanaman secara optimal.

Kata kunci: alternatif pembenah tanah, angsana, *fly ash*, kalium humat, lahan pascatambang batubara, *recovery rate*.

ABSTRACT

Post-mining land generally undergoes degradation characterized by acidic, compacted, organic matter-deficient soil, as well as low nutrient availability. This study aims to analyze the effect of fly ash and potassium humate as soil conditioners in improving soil chemical properties and increasing the recovery rate of angkana (*Pterocarpus indicus*). The experiment utilized a non-factorial Completely Randomized Design (CRD) with eight treatment levels comprising bokashi 2 tons/ha (B100), bokashi 1 ton/ha (B50), fly ash 1 ton/ha + bokashi 1 ton/ha (F100B50), fly ash 500 kg/ha + bokashi 1 ton/ha (F50B50), fly ash 1 ton/ha + potassium humate 20 kg/ha + bokashi 1 ton/ha (F100H100B50), fly ash 500 kg/ha + potassium humate 20 kg/ha + bokashi 1 ton/ha (F50H100B50), fly ash 1 ton/ha + potassium humate 10 kg/ha + bokashi 1 ton/ha (F100H50B50), and fly ash 500 kg/ha + potassium humate 10 kg/ha + bokashi 1 ton/ha (F50H50B50). All treatments were replicated four times. Parameters observed included soil chemical properties and plant growth. The results showed that applying soil conditioner combinations improved soil chemical properties and increased plant recovery rate by 25% compared to the control. The combination of fly ash 500 kg/ha + potassium humate 10 kg/ha + bokashi 1 ton/ha (F50H50B50) provided the most optimal response. This combination demonstrates dosage efficiency, where reducing the bokashi rate by 50% maintains soil quality and optimal plant recovery.

Keywords: alternative soil conditioner, angkana, fly ash, post-coal mining land, potassium humate, recovery rate.